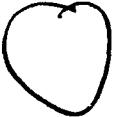


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POLLUTION-CONTROL REGIMES FOR U.S. NAVY VESSELS:
FROM BATTLESHIP GRAY TO ENVIRONMENTAL GREEN

by

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AUTHOR'S NOTE:

The views and opinions expressed in this paper are solely those of the author and do not necessarily reflect the views of the U.S. Department of the Navy or Department of Defense.

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TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION 1
II. IDENTIFICATION OF APPLICABLE POLLUTION-CONTROL REGIMES 7
A. Warships and the Question of Sovereign Immunity Under Marine Pollution-Control Regimes . . . . .	. . . . . 7
B. International Convention for the Prevention of Pollution From Ships (MARPOL 73/78) and Associated U.S. Law . . . . .	. . . . . 12
C. Convention of the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention) and Associated U.S. Law . . . . .	. . . . . 18
D. The Federal Water Pollution Control Act . . . . .	. . . . . 26
E. United States Public Vessel Medical Waste Anti-Dumping Act of 1988 . . . . .	. . . . . 28
III. REGIMES ESTABLISHED FOR SPECIFIC POLLUTANTS . . . . .	. . . . . 30
A. Oil and Oily Wastes . . . . .	. . . . . 30
1. Operational Discharge Rules . . . . .	. . . . . 33
2. Ship Construction and Equipment Standards . . . . .	. . . . . 36
3. Administrative Requirements . . . . .	. . . . . 40
4. Exceptions . . . . .	. . . . . 42
B. Hazardous Materials . . . . .	. . . . . 43
C. Sewage . . . . .	. . . . . 48
D. Garbage and Plastics . . . . .	. . . . . 54
E. Medical Waste . . . . .	. . . . . 61
IV. CONCLUSION . . . . .	. . . . . 62

I. INTRODUCTION

"The Navy is committed to operating its ships and shore facilities in a manner compatible with the environment. National defense and environmental protection are, and must be, compatible goals."¹

Within the past 40 years, the International Community has awakened to problems posed by "vessel-source pollution," the disposal of shipboard generated wastes into the sea. Discharge of vessel wastes is undoubtedly a practice as old as man's earliest forays upon the seas, and it was long assumed that the ocean's capacity to absorb wastes was infinite. There is, however, a growing consciousness that "wastes introduced into the seas are not 'assimilated' but recirculated and that 'disposal' in a closed system is a misnomer."²

¹ Chief of Naval Operations Instruction (OPNAVINST) 5090.1A, Environmental and Natural Resources Program Manual, Sec. 1-5.1.

² W. Jackson Davis, GLOBAL ASPECTS OF MARINE POLLUTION POLICY: THE NEED FOR A NEW INTERNATIONAL CONVENTION, *Marine Policy*, 194 (May 1990). Examples of this concept are abundant: tar balls ranging in size from less than 1 mm to 10-20 cm in diameter occur in the surface waters of all oceans, predominantly in major shipping routes and ocean currents, mostly derived from routine shipping operations, R. B. Clark, *MARINE POLLUTION*, 35 (1992); plastic "beads" ranging in size from .1 mm to 5 mm in diameter are prevalent in areas of the oceans (14 beads per cubic meter in Long Island Sound, 3,500 beads or 290 grams per square kilometer in the Sargasso Sea) and are often ingested by fish and birds, National Academy of Sciences, ASSESSING POTENTIAL OCEAN POLLUTANTS, Chapter 8 (1975); during the late 1980's, semi-annual beach clean-ups of the Texas coast collected one ton of trash per mile of beach, 75% of which was believed to be ship-generated, IMPLEMENTATION OF THE MARINE PLASTIC POLLUTION RESEARCH AND CONTROL ACT: HEARING BEFORE THE SUBCOMM. ON SUPERFUND, OCEAN, AND WATER PROTECTION OF THE SENATE COMM. ON ENVIRONMENT AND PUBLIC WORKS, 102d Cong., 2d Sess. 3, 44 (1992) (written statement of Garry Mauro, Texas General Land Office) (hereinafter referred to as "MPPRCA Implementation Hearings"). In 1975, it was estimated that 6.5 million tons of ship-generated solid waste was discarded at sea every year (contribution of the world's navies was estimated at little over 1% of this figure), ASSESSING POTENTIAL OCEAN POLLUTANTS, *supra*.

Controlling vessel-source pollution poses unique management challenges for the United States Navy. Warships differ from merchant vessels of comparable size in three significant ways: first, level of manning; second, type and amount of activity taking place on board, and; third, mode of operation as a component of the national defense.

Consider the case of a deployed aircraft carrier. Displacing between 90,000 to 100,000 tons, with a complement of approximately 5,500 sailors³, the NIMITZ-class carrier constitutes a "floating city" and generates significant amounts of wastes related both to daily crew functions⁴ and to uniquely military industrial activity.⁵ The carrier is designed to be self-sufficient, capable of remaining at sea for extended periods of time.⁶ Virtually every

³ JANE'S FIGHTING SHIPS 1992-93, at 736 (CAPT Richard Sharpe, OBE RN, ed.). Contrast this level of manning with a supertanker displacing 200,000 tons which will typically maintain a crew of 30-40 men. MPPRCA Implementation Hearings, *supra* note 2, at 128.

⁴ Included are food wastes from 18,000 meals per day, trash, plastics and sewage. It is estimated that 2.4 pounds of pulpable trash is generated per crewmember per day, equating to approximately 6 tons per day for a deployed carrier. MPPRCA Implementation Hearings, *supra* note 2, at 126.

⁵ This includes wastes generated from maintenance of approximately 70 aircraft, launch and recovery systems, support equipment, ship weapon systems, etc.

⁶ During the Iranian Hostage Crisis in 1979-1980, carrier battle groups remained "on station" in the Indian Ocean/Arabian Sea for extended, continuous periods: USS NIMITZ (CVN 68) - 144 days at sea; USS EISENHOWER (CVN 69) - 92 days at sea; USS CONSTELLATION (CV 64) - 110 days at sea. LCDR Roger Whiteway, A NAVY PILOT: HOW "JUST DOING OUR JOB" HAS CHANGED, The Christian Science Monitor, Dec. 19, 1980, at 22; CAT-AND- MOUSE GAME AT SEA, Newsweek, Feb. 22, 1982, at 39; Richard Halloran, DAY IN THE LIFE OF THE AIRCRAFT CARRIER CONSTELLATION, N.Y. Times, Mar. 14, 1982, at 16.

space on board has an intended use or purpose with little room to store accumulated wastes.⁷ Of paramount concern for the carrier is "Damage Control," the ability to sustain damage and remain both afloat and operational. In ensuring Damage Control Readiness, crew health and sanitation must be maximized, and fire and safety hazards minimized, with access to all equipment and spaces preserved under the most severe of conditions.⁸ Finally, the carrier must maintain maximum flexibility of operations and movement. Pollution-control programs must accomplish a balancing between environmental protection and mission requirements.

⁷ It is estimated that the average sailor generates .2 lbs of plastic waste per day. For a carrier, this equates to a half-ton of plastic waste per day, a volume which would occupy approximately 700 cubic feet of space. If allowed to accumulate for a 30-day at sea period, 21,000 cubic feet of plastic waste would require a storage space seven feet high, 30 feet wide and 100 feet long. NAVY DUMPING INCIDENTS AT SEA: HEARINGS BEFORE THE SUBCOMM. ON OCEANOGRAPHY, GREAT LAKES AND THE OUTER CONTINENTAL SHELF OF THE HOUSE COMM. ON MERCHANT MARINE AND FISHERIES, 102d Cong., 1st Sess. 17 (1991) (written statement of Nancy Stehle, Deputy Director for Environment, Office of the Assistant Secretary of the Navy (Installations and Environment)) (hereinafter referred to as "Navy Dumping Hearing").

⁸ "Fire hazards are already high on Navy ships because of the tight quarters, industrial and military operations, and large crew sizes . . . One of the principle recommendations of the Navy Blue Ribbon Panel that investigated the USS STARK incident in 1987, was to reduce fire loads and combustibles on ships." Storage of accumulated wastes is inconsistent with such considerations. Further, "[s]toring wastes throughout a ship decreases sailors' morale, increases sanitation risks, and thwarts the Navy's efforts to increase ship habitability." U.S. Dept. of the Navy, Report to Congress, U.S. NAVY COMPLIANCE WITH THE MARINE PLASTIC POLLUTION RESEARCH AND CONTROL ACT OF 1987, 26 (Jun. 1993).

The Navy initiated its vessel pollution-control program in 1970.⁹ Early in this process it was assumed that available technology could be applied to Navy ships with little or no modification. This assumption quickly proved to be erroneous because of size, space, and weight requirements, and the severity of use that equipment experiences under shipboard conditions.¹⁰ Consequently, a comprehensive research and development program was established in 1972, both to develop new technologies for pollution-control equipment and to make major modifications to existing equipment to make it suitable for the Navy's unique mission.¹¹ This "R&D" program has been successful in producing technology not only useful in military vessels but also in commercial shipping operations.¹²

⁹ U.S. Dept. of Commerce, NATIONAL OCEAN POLLUTION PROGRAM: SUMMARY OF FEDERAL PROGRAMS AND PROJECTS, FY 1989, 201 (Sep. 1991).

¹⁰ One example of commercial technology being inadequate for shipboard requirements involves trash compactors. "To produce a sinkable trash slug, the compactor must apply pressures up to 400 pounds per square inch . . . Commercial compactors apply about 50 pounds per square inch and do not produce sinkable slugs. The Navy-designed compactor is large . . . and reliability is paramount." MPPRCA Implementation Hearings, *supra* note 2, at 126-7.

¹¹ NATIONAL OCEAN POLLUTION PROGRAM, *supra* note 9, at 201.

¹² "[Navy] technology has also been shared in the commercial world. The Navy-developed oil-water separation technology has been commercially available for many years and is now in wide use in the shipping industry. Also, we have discussed with industry, opportunities to license our solid waste management technology for commercial application. We will continue with this open approach to the waste management business." MPPRCA Implementation Hearings, *supra* note 2, at 24.

Development and installation of pollution-control technology is but one element of a comprehensive pollution management program. As important to the Navy's efforts in this area is the commitment of individual Commanding Officers to implement effective unit-level programs through training and the fostering of an environmental consciousness within the command.¹³ Dedicated and sustained leadership is required in creating a command climate wherein

¹³ One U.S. Army commentator writes that military commanders possess moral as well as legal obligations to take responsibility for environmental protection. "Peacetime responsibilities are founded on the commander's professional responsibility as an agent of the state." Those "responsibilities may be summarized as follows:"

- "(1) Site and operate bases and other facilities in an environmentally safe way.
- (2) Design and operate industrial operations . . . that are nonpolluting.
- (3) Carefully safeguard and control especially hazardous materials.
- (4) Conduct peacetime training in a manner compatible with environmental preservation.
- (5) Take appropriate steps to protect species.
- (6) Continually identify and repair environmental damage.
- (7) Comply with appropriate local, state and national laws.
- (8) Create and train staff agencies to assist commanders in their environmental responsibilities.
- (9) Train soldiers to protect the environment.
- (10) Enforce environmental laws with an appropriate system of education, reward and punishment."

Merrit P. Drucker, THE MILITARY COMMANDER'S RESPONSIBILITY FOR THE ENVIRONMENT, 11 ENVTL. ETHICS 135, 142-43 (1989). The majority of these considerations seem equally applicable to Commanders of embarked vessels and are consistent with one of the Navy's most important concepts: the responsibility and authority of the Commanding Officer for his or her ship is absolute. Navy Regulations, Sec. 0802 (1991). Given the relative autonomy the Commanding Officer of a deployed vessel often maintains, his or her actions in supporting environmental protection regimes are important representations and indications of official U.S. policy.

compliance with established discharge regulations is shipboard routine.

Before the Commanding Officer can meet such obligations, he or she must first determine the applicable regulatory scheme governing discharge of wastes at sea. This is a complicated task, given that norms prescribed by various international conventions or national laws may apply depending on the location of the vessel and the nature of the waste material involved. Even for a Commanding Officer familiar with the legal intricacies of pollution-control at sea, achieving the appropriate balance between military mission accomplishment and environmental protection may seem a formidable challenge. It is therefore essential that Navy decision-makers understand the inter-relationships of the various pollution control-regimes, knowing where special considerations are afforded warships in performance of the Navy's mission.

The purpose of this paper is threefold: to identify the different pollution-control regimes governing U.S. Navy vessels¹⁴; to analyze the regimes as they pertain to the common "pollutants" generated by U.S. Navy vessels incidental to normal operations at sea, namely oil and oily waste products, hazardous materials,

¹⁴ One area not addressed by this study is that of pollution-control regimes when transiting national waters of foreign states and/or calling at foreign ports. Pollution-control measures for transiting/visiting U.S. Navy vessels are usually determined through individual treaty (normally, "Status of Forces" agreement) or specified in the particular visit clearance instructions issued by the host nation. OPNAVINST 5090.1A, *supra* note 1.

sewage, garbage (including plastics), and medical waste, and; to review how the U.S. Navy seeks to comply with applicable regimes. Discussion will focus on those exceptions and allowances made for Navy ships, ones not available to civilian counterparts, given the unique nature and purpose of vessels of war. I conclude that the U.S. Navy has been successful in developing programs to achieve that level of vessel-source pollution-control which the nation, through Congress, has chosen to expect from its warships. Yet, as the International Communities' concern for the environmental health of the oceans continues to grow¹⁵, the Navy must have the goal of attaining "environmentally sound ships"¹⁶ in order to maintain operational freedom of the seas.

II. IDENTIFICATION OF APPLICABLE POLLUTION-CONTROL REGIMES

A. Warships and the Question of Sovereign Immunity Under Marine Pollution-Control Regimes

As both a political and military instrumentality of the State, warships have traditionally been afforded sovereign immunity from the prescriptive, enforcement, and judicial jurisdiction of foreign

¹⁵ Representative is Chapter 17 of Agenda 21 from the 1992 Earth Summit. "The marine environment - including the oceans and all seas and adjacent coastal areas - forms an integrated whole that is an essential component of the global life-support system." THE EARTH SUMMIT: THE UNITED NATIONS CONFERENCE ON ENVIRONMENT AND DEVELOPMENT (UNCED), Sec. 17.1 at 307 (Stanley P. Johnson (ed.)) (1992). Priority actions within Chapter 17 include States committing themselves to additional measures necessary to address degradation of the marine environment resulting from sea-based activities. *Id.*, Sec. 17.21, 17.30.

¹⁶ Larry Koss, ENVIRONMENTALLY SOUND SHIPS OF THE 21ST CENTURY, Proceedings of the First Environmental Symposium, American Society of Naval Engineers (Feb. 1993).

States.¹⁷ The flag State has always borne the responsibility under International Law to regulate, and where necessary provide redress for, the actions of warships.¹⁸

With the development of international conventions pertaining to marine pollution issues, the question arose of how to address warship compliance with those pollution-control norms being prescribed. For naval powers, there was the concern that international regulation might be "inappropriate to the special configuration or mission of certain warships. It was also feared that coastal States, in the exercise of powers to prevent and

¹⁷ See Article 8, 1958 Convention on the High Seas, 13 U.S.T. 2312, TIAS 5200: "Warships on the high seas have complete immunity from the jurisdiction of any State other than the flag State." Sovereign Immunity also follows a warship into waters subject to national jurisdiction. In one of the earliest U.S. cases to affirm this principle, THE SCHOONER EXCHANGE V. MCFADDON, 11 U.S. (7 Cranch) 116 (1812), the Supreme Court held that a French warship then located in a U.S. port could not be libeled by U.S. citizens despite the fact that the warship was, in reality, an American merchant vessel that had been wrongfully seized and confiscated on the high seas by the French government. Writing for the Court, Chief Justice Marshall stated:

"She [a public armed vessel] constitutes a part of the military force of her nation; acts under the immediate and direct command of the sovereign; is employed by him in national objects. He has many and powerful motives for preventing those objects from being defeated by the interference of a foreign state. Such interferences cannot take place without affecting his power and his dignity . . . It seems then to the Court, to be a principle of public law, that national ships of war, entering the port of a friendly power open for their reception, are to be considered as exempted by the consent of that power from its jurisdiction."

At 144-6.

¹⁸ "[T]he sovereign power of the nation is alone competent to avenge wrongs committed by a sovereign." Id.

control pollution from foreign ships, could thereby acquire leverage over warship passage in general . . . [Further,] questions regarding the compliance of a warship with a particular standard might require the inspection or release of data regarding the ship, its design or its equipment - data that most flag States would be reluctant to disclose."¹⁹

In attempting to accommodate such concerns, three different approaches emerged to address warship treatment under international marine pollution-control regimes.²⁰ The earliest approach was to simply exempt warships from the operation of the convention's norms²¹; for the most part, this approach has been abandoned.²² A

¹⁹ Bernard H. Oxman, THE REGIME OF WARSHIPS UNDER THE UNITED NATIONS CONVENTION ON THE LAW OF THE SEA, 24 VA. J. INT'L L. 809, 820-1 (1984) (hereinafter referred to as "Oxman").

²⁰ For a general discussion, see Gregorios J. Timagenis, INTERNATIONAL CONTROL OF MARINE POLLUTION, 61 (1980).

²¹ "Consideration of the problem of the discharge of oil at sea had been given in the abortive Washington Conference of 1926. The League of Nations . . . consider[ed] the matter again in 1935." MARPOL 73/78; A SOFT-TEXT EDITION, 1 (Kenneth R. Simmonds & Brian H.W. Hill, ed.) (1994). Both Conferences produced Draft Conventions, upon which the 1954 Convention on the Prevention of Pollution of the Sea by Oil (OILPOL), 12 U.S.T. 2989, TIAS 4900, was based. Both the 1926 and 1935 Draft Conventions expressly provided for the exemption of "vessels commissioned in the naval services of the High Contracting Parties." INTERNATIONAL PROTECTION OF THE ENVIRONMENT; TREATIES AND RELATED DOCUMENTS, Volume XIX, 9585-9602 (Bernd Ruster & Bruno Simma, ed.) (1979). Following this pattern, Article II to OILPOL, as originally written, exempted "ships for the time being used as naval auxiliaries." However, this provision was amended in April 1962, to reflect the third approach discussed infra.

²² Of note, the International Convention Relating to Intervention on the High Seas in Cases of Oil Pollution Casualties, 2 U.S.T. 765, TIAS 8068, continues to exempt warships from the

second method is to specifically provide a sovereign immunity reservation; under this approach, the convention's norms are made fully applicable to warships but enforcement is reserved exclusively for the Flag State.²³ The third approach is to provide exemption for warships, coupled with obligations that States ensure their warships act consistent with the convention's norms so far as reasonable and practicable.²⁴ This latter approach has gained acceptance as the standard for warships under international marine pollution regimes. Article 236 of the 1982 United Nations Convention on the Law of the Sea (hereinafter "UNCLOS III") reflects such treatment for warships under its "Protection and Preservation of the Marine Environment" regime.²⁵

operation of the norm which authorizes coastal State intervention in certain maritime casualties.

²³ See the Oslo Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft, Article 15(6), 11 I.L.M. 262 (1972). The Oslo Convention does not specifically address warships, rather in that Article defining applicability of norms, there is provision that "[n]othing in this Convention shall abridge sovereign immunity to which certain vessels are entitled under international law."

²⁴ See: International Convention for the Prevention of Pollution From Ships (MARPOL 73/78), Article 3(3), 12 I.L.M. 1319; 1975 Convention for the Protection of the Mediterranean Sea Against Pollution ("Barcelona Convention"), Protocol for the Prevention of Pollution of the Mediterranean Sea by Dumping from Ships and Aircraft, Article 11, 15 I.L.M. 290; 1978 Kuwait Regional Convention for Cooperation on the Protection of the Marine Environment from Pollution with Protocol Concerning Regional Cooperation in Combating Pollution by Oil and Other Harmful Substances in Cases of Emergency, Article XIV, 17 I.L.M. 511.

²⁵ See Part XII, UNCLOS III. "Because warships were not considered a substantial source of marine pollution, and because the rules of sovereign immunity would have restricted the possibilities of enforcement against the will of the flag State in any event, there was no significant opposition to article 236.

Thus, in evaluating any international marine pollution-control regime, one must carefully consider how the question of sovereign immunity has been addressed. As a general rule, warships are exempted from direct application of the international regime but are expected to comply with the substantive standards to the greatest extent possible.

While retaining sovereign immunity as to all other nations, warships must comply with the applicable laws and regulations of the flag State. In the U.S., Congress has typically made specific provision for public vessels, including warships, in those national environmental laws which regulate marine pollution. These provisions are designed both to effectuate the international obligation of ensuring warship consistency and to provide that level of environmental compliance considered appropriate by Congress.

Given the unique interaction of pollution-control regimes as pertain to warships, familiarity with both the international and national legal framework is important to understanding the scope of applicable rules. In the following sections, international vessel-source pollution regimes to which the U.S. is a Party will be introduced, followed by a general discussion of U.S. laws which

Moreover, given the political mission of naval vessels that operate far from their home shores in peacetime, it was not considered unrealistic to expect a high degree of self-imposed environmental diligence by major flag States in any event." Oxman, *supra* note 19, at 821.

govern U.S. Navy vessel discharges at sea. The specific pollution-controls that these regimes establish will be presented in Section III.

B. International Convention for the Prevention of Pollution From Ships (MARPOL 73/78) and Associated U.S. Law

MARPOL 73/78²⁶ represents the second generation of international vessel-source pollution agreements. The first coordinated international attempt to regulate vessel-source pollution was the 1954 Convention on the Prevention of Pollution of the Sea by Oil (OILPOL).²⁷ OILPOL established "prohibited zones" in the oceans wherein operational discharges of oil from ships were required to be limited²⁸; the original intent of the Convention was aesthetics based, to lessen the amount of oil being deposited into waters near coastal areas, rather than a comprehensive effort to prevent marine pollution. Despite several attempts at amendment, OILPOL had little success in controlling operational discharges.²⁹

²⁶ The 1973 MARPOL Convention and its 1978 Protocol may be found at 12 I.L.M. 1319 and 17 I.L.M. 546, respectively. The MARPOL 73/78 Annexes have undergone significant amendment; an up-to-date version of the current agreement can be found in MARPOL 73/78; A SOFT-TEXT EDITION, *supra* note 21.

²⁷ 12 U.S.T. 2989, TIAS 4900.

²⁸ OILPOL, Article III. Generally, the limitation imposed was that effluent discharges could not exceed 100 parts per million (ppm) of oil within 50 miles of coastal areas, with larger zones established for certain areas of the oceans.

²⁹ For a general history of the international communities' efforts to regulate operational discharges of oil, see McGonigle and Zacher, *POLLUTION, POLITICS AND INTERNATIONAL LAW: TANKERS AT SEA* (1979). By 1973 "[i]t was a different world . . . The size of the trade, the size of tankers, and the scope of the pollution were

Negotiated in the light of an awakening global environmental consciousness, due at least in part to several catastrophic maritime casualties involving oil tankers, MARPOL 73/78 built upon the experience of OILPOL with regard to operational discharges of oil and expanded its regulatory scope to encompass other common vessel-source pollutants, including noxious liquid substances carried in bulk, harmful substances carried in packaged form, sewage and garbage.³⁰ Despite initial difficulties in gaining a sufficient number of ratifications to allow MARPOL 73/78's entry into force³¹, the United States deposited its instrument of

now of a new order of magnitude. But the law in force was only the 1954 Convention as amended in 1962. And that was a very deficient system - virtually unenforceable outside of ports and hence widely unobserved. The real control system in use throughout the world (load-on-top) was illegal [and otherwise ineffective] . . . The situation was anarchic. And pollution was getting worse." Id., at 107. It was estimated in the late 1960's that "approximately 85% of all oil entering the world's oceans from marine transport operations was the result of operational discharges." S. EX. REP. 96th Cong., 2d Sess. (1980) (written statement of RADM Bell). This 85% figure represented in excess of 1 million tons of oil per year. Clark, *supra* note 2, 28-9.

³⁰ State Parties to MARPOL 73/78 are required to adhere to those Annexes which detail provisions concerning prevention of pollution by oil and noxious liquid substances carried in bulk; Annexes dealing with harmful substances carried in packaged form, sewage and garbage are "Optional Annexes" which do not bind any State Party unless specifically acceded to. MARPOL 73/78, Article 14.

³¹ The 1973 Convention was never ratified by the United States nor a sufficient number of other maritime nations to permit it to enter into force. The major reluctance to ratify MARPOL 73 was due to "technological inability to comply with the requirements for reception facilities for noxious liquid substances set forth in Annex II." S. EX. REP. No. 36, 96th Congress, 2d Sess. (1980) (written statement of RADM Bell). New life was breathed into the MARPOL Convention following the winter of 1976-77 when sixteen tanker accidents occurred in and around the waters of the United States. Pursuant to U.S. request, a "Tanker Safety and Pollution

ratification on August 12, 1980.³² MARPOL 73/78 entered into force on October 2, 1983.³³

MARPOL 73/78's stated desire is to "achieve the complete elimination of intentional pollution of the marine environment by oil and other harmful substances and the minimization of accidental discharges of such substances."³⁴ The basic framework established

"Prevention Conference" was held in London in 1978, resulting in the MARPOL Protocol. H. R. REP. NO. 1224, 96th Cong., 2d Sess. (1980), reprinted in 1980 U.S. CODE CONG. & AD. NEWS 4849, 4851. The goal of the Protocol was to incorporate the 1973 Convention and modify it with stricter design and construction standards; a delay for entry into force of Annex II was conceded to encourage ratification. The 1973 Convention is not intended to enter into force except as specifically incorporated by the 1978 Protocol. It is thus referred to as "MARPOL 73/78."

³² International Maritime Organization (IMO), STATUS OF MULTILATERAL CONVENTIONS AND INSTRUMENTS OF WHICH THE INTERNATIONAL MARITIME ORGANIZATION OR ITS SECRETARY-GENERAL PERFORMS DEPOSITORY OR OTHER FUNCTIONS, 121 (Dec. 31, 1993). The U.S. instrument of ratification did not originally exclude the Optional Annexes, however, by later communication the U.S. advised IMO that its ratification did not extend to Annexes III, IV, and V. The U.S. has subsequently acceded to Annex V (Dec. 30, 1987) and Annex III (Jul. 1, 1991); the U.S. has not acceded to Annex IV as of this date. Id.

³³ MARPOL 73/78 entered into force on October 2, 1983, with Annex I (Oil) effective that date; Annex II (Noxious Liquid Substances in Bulk) effective April 6, 1987; Annex III (Harmful Substances in Packaged Forms) effective July 1, 1992; Annex IV (Sewage) is not in force as of this date; and Annex V (Garbage) effective December 31, 1988. IMO, MARPOL 73/78, CONSOLIDATED EDITION, 1991, pp. 2-3 (1992) (hereinafter referred to as "IMO-520E").

³⁴ MARPOL 73/78, Preamble. As to MARPOL 73/78's success, at least as relates to oil pollution, it is estimated that "the amount of oil entering the seas as a result of tanker operations has steadily reduced from an estimated 1 [million metric tons (t.) per year] or more in the mid 1970s, to 700,000 t. in 1981, and to 158,000 t. in 1989." Clark, *supra* note 2, at 28-9.

to accomplish this goal is twofold: first, the setting of operational discharge controls or prohibitions, coupled with obligations of littoral State Parties to install adequate reception facilities for accumulated wastes, and: second, the setting of construction, design and equipment standards that compel shipowners to install the technologies that enable ships to comply with the operational discharge rules.³⁵

By its very terms, MARPOL 73/78 does not apply to warships, naval auxiliaries or other State owned or operated ships in non-commercial service.³⁶ Nevertheless, the Parties to MARPOL 73/78 have agreed to "ensure by the adoption of appropriate measures not impairing the operations or operational capabilities of [warships] owned or operated by [a State], that such ships act in a manner consistent, so far as is reasonable and practicable, with the present Convention."³⁷

The provisions of MARPOL 73/78 were made applicable to ships of United States registry or nationality through the "Act to Prevent Pollution from Ships" (hereinafter "APPS").³⁸ Consistent with the exemption contained in MARPOL 73/78, U.S. warships were

³⁵ The lack of this second factor was a particular criticism of OILPOL. See McGonigle, *supra* note 29, at 93, 114.

³⁶ MARPOL 73/78, Article 3(3).

³⁷ *Id.* See discussion contained in Sec. II.A., *supra*.

³⁸ Pub. L. 96-478, 94 Stat. 2297, codified at 33 U.S.C. Sec. 1901 *et seq.*

originally excluded from the operation of APPS.³⁹ The Secretary of Defense was directed to "prescribe standards" applicable to Navy ships to meet U.S. international obligations.⁴⁰

While Navy vessels were originally exempted from MARPOL 73/78's application in favor of internal Department of Defense (DoD) regulations, Congress amended APPS with the "Marine Plastics Pollution Research and Control Act of 1987" (hereinafter "MPPRCA").⁴¹ National implementation of MARPOL 73/78 was changed to state that "[n]otwithstanding any provision of the MARPOL Protocol, . . . the requirements of Annex V to the Convention shall apply after 5 years after the effective date of this paragraph [December 31, 1988] to [warships]."⁴² Annex V of MARPOL 73/78 specifically pertains to the operational discharge of garbage and plastics. Two significant provisions were added to this general statement: first, Annex V would not apply to Navy ships during time of war or declared national emergency⁴³, and; second, the Navy could file a report by the end of 1991 setting forth its inability to comply with Annex V, along with an alternative schedule for

³⁹ Pub. L. 96-478, Sec. 3(b)(1).

⁴⁰ Id., Sec. 3(d). "Standards prescribed . . . shall ensure, so far as is reasonable and practicable without impairing the operations or operational capabilities of such ships, that such ships act in a manner consistent with the MARPOL Protocol."

⁴¹ Pub. L. 100-220, 101 Stat. 1460 (1987).

⁴² 33 U.S.C. Sec. 1902(b).

⁴³ Id.

achieving compliance "as rapidly as is technologically feasible," which Congress would then incorporate in modification to the applicability of Annex V "as may be appropriate."⁴⁴

The Navy informed Congress in July 1991 that it would be unable to totally comply with the requirements of Annex V by the statutorily imposed December 31, 1993, deadline.⁴⁵ As part of the National Defense Authorization Act for Fiscal Year 1994⁴⁶, Congress modified the application of Annex V to Navy ships by establishing interim deadlines so that full compliance for surface ships is achieved not later than December 31, 1998, and for submersibles not later than December 31, 2008.⁴⁷ Congress also provided a procedure whereby the President may waive these effective dates if it is

⁴⁴ Pub. L. 100-220, Sec. 2202. Congress seemed to foresee difficulties in the Navy achieving total compliance within 5 years. In the Legislative History to MPPRCA, the Congressional Budget Office Cost Estimate stated that, for the Navy, "implementation has been estimated to take 15 years." H. R. REP. No. 489, 100th Cong., 1st Sess., reprinted in 1987 U.S. CODE CONG & AD. NEWS 2511, 2523.

⁴⁵ Navy Dumping Hearing, *supra* note 7, at 29. A formal report, *supra* note 8, summarizing the Navy's efforts and requesting Congressional extension for MPPRCA compliance, was filed in June 1993.

⁴⁶ Pub. L. 103-160, 107 Stat. 1547 (1993), enacted Nov. 30, 1993.

⁴⁷ *Id.*, Sec. 1003(a). Separate provisions were made regarding discharges in "Special Areas." See discussion at Section III.D., *infra*.

determined "to be in the paramount interest of the United States to do so."⁴⁸

In summary, MARPOL 73/78 does not apply to warships but States are required to ensure that their warships act in a consistent manner, to the maximum extent possible without impairing operational capability. U.S. law allows the Secretary of Defense to implement regulations in meeting this standard. However, with regard to garbage, Annex V has been made specifically applicable to Navy ships with a phased-in time period designed to ensure compliance for most vessels by 1999.

C. Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter (London Convention) and Associated U.S. Law

Initiatives to control the dumping of wastes into the sea began in the United States in 1970.⁴⁹ At Presidential direction, the Council on Environmental Quality (CEQ) studied the issue of ocean dumping and concluded not only that such practice carried the potential for serious environmental damage but also that pressures

⁴⁸ Id., Sec. 1003(d). Precedent for such a provision exists in the Federal Water Pollution Control Act, discussed in Section II.D., *infra*.

⁴⁹ By this time there were definite signs of negative environmental impacts in areas of the seas where dumping was occurring or had occurred in the past. See Schachter & Serwer, MARINE POLLUTION PROBLEMS AND REMEDIES, 65 A.J.I.L. 84, 105-10 (1971). Particularly significant in the U.S. context was the public debate leading up to the disposal of Army nerve gas rockets in the Atlantic Ocean in August 1970.

for ocean disposal of even more wastes, including toxic materials, were increasing.⁵⁰ The CEQ found existing regulatory activities and authorities inadequate to handle the problems presented and recommended "legislation to ban unregulated dumping of all materials in the ocean and to prevent or vigorously limit the dumping of harmful materials."⁵¹

While U.S. lawmakers began work on national legislation, the President "instructed the Secretary of State . . . to develop and pursue international initiatives directed toward this same objective on a global basis."⁵² This led to the U.S. tabling a draft "Convention for the Regulation of Transportation for Ocean Dumping"⁵³ at the June 1971 meeting of the Intergovernmental Working Group on Marine Pollution, then preparing for the United

⁵⁰ CEQ, OCEAN DUMPING: A NATIONAL POLICY, 11 (1970). The CEQ's report indicated that in 1968 alone, approximately 48 million tons of wastes were dumped in the oceans from sources within the U.S., and that

"[t]he data indicate that the volume of wastes dumped in the ocean is increasing rapidly. Many are harmful or toxic to marine life, hazardous to human health, and esthetically unattractive. In all likelihood, the volume of ocean-dumped wastes will increase greatly due to decreasing capacity of existing disposal facilities, lack of nearby land sites, higher costs, and political problems in acquiring new sites." Id.

⁵¹ Report on Ocean Dumping - Message From the President, Oct. 7, 1970, 116 CONG. REC. 35523.

⁵² Terry L. Leitzell, THE OCEAN DUMPING CONVENTION - A HOPEFUL BEGINNING, 10 SAN DIEGO L. REV. 502, 503 (1973).

⁵³ 10 I.L.M. 1021.

Nations Conference on the Human Environment.⁵⁴ After international consideration of the U.S. proposal at the Stockholm Conference, the United Kingdom convened an Intergovernmental Conference on the Convention on the Dumping of Wastes at Sea, which ultimately resulted in the London Convention being opened for signature in December 1972. The United States deposited its instruments of ratification in April and May of 1974; the London Convention entered into force on August 30, 1975.⁵⁵

The aim of the London Convention is to "prevent the pollution of the sea by the dumping of waste and other matter that is liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea."⁵⁶ Its jurisdiction over dumping applies to all "seas," defined as "all waters other than the internal waters of States."⁵⁷ The London Convention's control mechanism is formulated through establishment of "Black" and "Grey"

⁵⁴ Leitzell, *supra* note 52, at 503-4.

⁵⁵ 26 U.S.T. 2404; TIAS 8165.

⁵⁶ London Convention, Article I.

⁵⁷ *Id.*, Article III (3).

lists that respectively prohibit⁵⁸ or regulate⁵⁹ the dumping of particular types of "wastes or other matter."⁶⁰

The term "dumping" has special significance under the London Convention; specifically excluded from the definition of "dumping" is the "disposal at sea of wastes or other matter incidental to, or derived from the normal operations of vessels . . . and their equipment."⁶¹ Thus, vessel-source pollution will not typically fall within the scope of the London Convention's regulations unless the vessel is itself "operating for the purpose of disposal of such matter."⁶²

⁵⁸ Id., Article IV (1)(a); the "Black" list of wastes is contained in Annex I to the Convention.

⁵⁹ Id., Article IV (1)(b)&(c); the "Grey" list of wastes is contained in Annex II to the Convention. Each State is required to establish an "appropriate authority" to issue special permits for "Grey" list wastes and general permits for dumping of all other matter. There are also requirements that each State maintain records pertaining to dumping permitted and to monitor the "condition of the seas for the purposes of this Convention." Article VI.

⁶⁰ Id.

⁶¹ Id., Article III, 1(b)(i).

⁶² Id. "This last exception supports the view that the term 'normal operations' includes not only technical but also commercial operations. This leads to the further conclusion that discharge of residues of cargo is not included in the definition of dumping. This last conclusion is further reinforced by the very fact that the whole control system established by the Convention (i.e., licensing system) cannot apply to residues of cargo." Timagenis, *supra* note 20, at 199 (see also footnote 163: "The above remarks do not mean that such discharges should be left uncontrolled, but only that they do not fall under the control of the Dumping Convention.").

Like MARPOL 73/78, the London Convention specifically exempts vessels and aircraft entitled to sovereign immunity from the standards contained within the Convention.⁶³ Similarly, the Parties to the Convention are to adopt "appropriate measures that such vessels . . . act in a manner consistent with the object and purpose of this Convention."⁶⁴ There is, however, an important distinction between the MARPOL 73/78 exemption and that of the London Convention. MARPOL 73/78 affords a State the ability to take into consideration the operational capabilities of warships in fashioning pollution-control measures; there is no corresponding language in the London Convention. Thus, in establishing dumping regimes for vessels entitled to sovereign immunity, States cannot substantially deviate from the norms of the London Convention.⁶⁵

The London Convention has been implemented into U.S. law through the "Marine Protection, Research and Sanctuaries Act of

⁶³ Id., Article VII, 4. "This Convention shall not apply to those vessels and aircraft entitled to sovereign immunity under international law."

⁶⁴ Id.

⁶⁵ During the negotiations on the London Convention, this issue was the subject of extensive debate. Timageenis, *supra* note 20, at 276-77; Leitzell, *supra* note 52, at 506. Some countries supported the total exemption approach while others argued for the sovereign immunity approach (see discussion contained in Section II.A., *supra*). The language finally adopted favors the latter approach, thus guarding against manipulation by States in simply conducting otherwise prohibited/regulated dumping operations by government vessels in non-commercial service.

1972" (MPRSA).⁶⁶ MPRSA states that "except as may be authorized by a permit

- "(1) no person shall transport from the United States, and
- "(2) in the case of a vessel or aircraft registered in the United States or flying the United States flag or in the case of a United States department, agency, or instrumentality, no person shall transport from any location

"any material for the purpose of dumping it into ocean waters."⁶⁷

From the plain language of the statute, Navy vessels fall within the operation of MPRSA's dumping rules. The definition of "dumping" under MPRSA excludes "routine discharge of effluent incidental to the propulsion of, or operation of motor-driven equipment on, vessels."⁶⁸ Arguably, this is a narrower exclusion than provided by the London Convention⁶⁹, yet the effect for vessel-source pollution is the same by operation of the statutory language that wastes must be transported "for the purpose of" disposal to meet the prohibition. Thus, even though a deployed

⁶⁶ Pub. L. 92-532, 86 Stat. 1052 (1972), codified at 33 U.S.C. Sec. 1401 et seq. Note that MPRSA predates the London Convention; it was amended in March 1974 to ensure consistency with international obligations.

⁶⁷ 33 U.S.C. Sec. 1411(a) (emphasis added).

⁶⁸ Id., Sec. 1402(f); 40 C.F.R. Section 220.1.

⁶⁹ That MPRSA excludes only the discharge of wastes incidental to "propulsion" vice "normal operations" of vessels under the London Convention. The difference in language would seem to be attributable to the fact that MPRSA preceded the London Convention rather than a desire by Congress to specifically distinguish or limit what vessel-source pollution was to be excluded from U.S. "dumping" regulations.

ship may generate wastes incidental to normal operations which are technically unrelated to propulsion⁷⁰, discharge to the sea is not contrary to MPRSA if such material was not originally taken on board for the deliberate purpose of dumping.⁷¹

Stated affirmatively, if a U.S. Navy vessel takes materials on board specifically for the purpose of disposal at sea, MPRSA permits are required.⁷² There are also certain uniquely military circumstances which might give rise to MPRSA issues. Navy ships

⁷⁰ An example would be "solid waste" or "garbage," both of which are specifically included in MPRSA's definition of covered "material." 33 U.S.C. Sec. 1402(c).

⁷¹ Congress has specifically regulated the area of vessel-source pollution under APPS and MPPRCA; such statutes are the controlling authority. Legislation introduced in the 102d Congress included an amendment to clarify the relation between MPRSA and APPS, specifically excluding "matter which derives from the normal operation of a vessel that discharge the matter in compliance with" MARPOL 73/78 and APPS from the definition of covered "material" under MPRSA. H. R. REP. No. 843, 102d Cong., 2d Sess. (1992). "Special note should also be made of the fact that 'dumping' . . . would not include an activity which has its primary purpose a result other than 'a disposition of material' but which involves the incidental depositing of some debris or other material in the relevant waters. For example, material from missiles and debris from gun projectiles and bombs ultimately come to rest in the protected waters. Such activities are not covered by the Act." S. REP. NO. 451, 92d Cong., 2d Sess. (1972), reprinted in 1972 U.S. CODE CONG. & AD. NEWS 4234, 4255-6 (written statement of William D. Ruckelhaus, EPA Administrator).

⁷² Such a MPRSA issue arose in "Operation Restore Hope," the U.S. operation in support of U.N. objectives in Somalia. After seizing several "technicals" from Somalia warlords, motor vehicles equipped with a various array of significant weaponry, some suggested that such vehicles be disposed of at sea. After determining that MPRSA permits would be required for such a dumping operation, alternative disposal arrangements were made, arrangements that included members of the Marine Corps dismantling the "technicals" and fashioning playground equipment for Somalia children. MacNeil/Lehrer News Hour, Apr. 27, 1993.

cannot be used as platforms for disposal of radiological, chemical, and biological warfare agents and high-level radioactive waste⁷³; MPRSA makes clear that no permits will be issued for dumping of such materials.⁷⁴ There are also specific EPA regulations on performing burials at sea, sinking of target vessels, and disposal of other vessels at sea, applicable to certain Navy operations.⁷⁵

In summary, the London Convention does not directly apply to warships of any country, but each State is required to ensure consistency with the Convention's norms. MPRSA does apply to U.S. Navy ships, but routine discharges related to vessel operation do not meet the definition of "dumping." There are situations, however, where MPRSA could have direct application and must be considered by Navy authorities in proper decision-making.

⁷³ Parties to the London Convention voted on November 12, 1993, to also prohibit the dumping of low-level radioactive waste in the oceans, a measure supported by the U.S., and which became effective on February 20, 1994. U.S. TO PRESS FOR BAN ON NUCLEAR DUMPING AT SEA, N.Y. Times, Nov. 2, 1993, at A5; PACT TIGHTENING A-WASTE DUMPING BAN SET, Facts on File, Dec. 2, 1993, at 891; NUCLEAR BAN TAKES HOLD - MINUS RUSSIA, Chicago Tribune, Feb. 22, 1994, at 1.

⁷⁴ 33 U.S.C. Sec. 1412. There is, however, an emergency exception available for all ships that allows dumping necessary to safeguard life at sea. 40 C.F.R. 200.1(c)(4).

⁷⁵ 40 C.F.R. 229.

D. The Federal Water Pollution Control Act (FWPCA)

The objective of the FWPCA⁷⁶ is to "restore and maintain the chemical, physical, and biological integrity of [U.S.] waters."⁷⁷ In order to achieve the Act's ambitious goals⁷⁸, Congress has made unlawful the "discharge of any pollutant"⁷⁹ into U.S. waters unless specifically permitted under the National Pollutant Discharge Elimination System (NPDES).⁸⁰

The geographic scope of the FWPCA with respect to vessel-source pollution is determined by the definition of "discharge of a pollutant"; such term means

- "(A) any addition of any pollutant to navigable waters from any point source
- (B) any addition of any pollutant to the waters of the contiguous zone or the ocean from any point source other than a vessel or other floating craft."⁸¹

The fact that vessel-source pollution is excepted from the operation of the FWPCA in the contiguous zone and ocean implies that vessels are a regulated "point source" for purposes of

⁷⁶ As amended by Pub. L. 92-500, 86 Stat. 816 (1972), codified at 33 U.S.C. Sec. 1251 et seq.

⁷⁷ 33 U.S.C. Sec. 1251(a).

⁷⁸ Congress stated it was "the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985." Id.

⁷⁹ 33 U.S.C. Sec. 1311(a).

⁸⁰ 33 U.S.C. Sec. 1342(a). Permits are issued by the Environmental Protection Agency (EPA) or, where a State has submitted a water pollution control program which receives EPA approval, by the State. 33 U.S.C. Sec. 1342(b).

⁸¹ 33 U.S.C. Sec. 1362(12).

subsection (A). This is confirmed in reviewing the definition of a "point source."⁸²

The next determination that must be made is what constitutes "navigable waters." For purposes of the FWPCA, this term means "the waters of the United States, including the territorial seas."⁸³ The territorial seas are further defined as

"the belt of the seas measured from the line of ordinary low water along that portion of the coast which is in direct contact with the open sea and the line marking the seaward limit of inland waters, and extending seaward a distance of three miles."⁸⁴

In short, the FWPCA's control on pollutant discharges from vessels is typically limited to the internal waters of the United States and the area extending three miles from the coastal baseline.

The requirements of the FWPCA are made specifically applicable to departments, agencies, or instrumentalities of the Federal Government which are "engaged in any activity resulting, or which may result, in the discharge or runoff of pollutants . . . and

⁸² A "point source" is defined as "any discernible, confined and discrete conveyance, including, but not limited to any . . . vessel or other floating craft from which pollutants are or may be discharged" (emphasis added). 33 U.S.C. Sec. 1362(14).

⁸³ 33 U.S.C. Sec. 1362(7).

⁸⁴ 33 U.S.C. Sec. 1362(8). Even though the U.S. extended its territorial sea for international purposes to 12 miles on December 27, 1988 (Presidential Proclamation 5928, 54 Fed. Reg. 777), this extension has not yet been adopted as an amendment to the FWPCA. Of interesting note is that Federal legislation recently introduced to amend numerous Acts and provisions of the U.S. Code to reflect the new limits of the territorial sea failed to include the FWPCA. H. R. REP. No. 102-843, *supra* note 71.

each officer, agent, or employee thereof . . . shall be subject to, and comply with, all Federal, State, interstate, and local requirements . . . respecting the control and abatement of water pollution."⁶ Thus, the Navy must comply with the mandates of the FWPCA and, where applicable, State and local requirements⁶, while operating within internal waters and up to three miles from the U.S. coast.⁷

E. United States Public Vessel Medical Waste Anti-Dumping Act of 1988

In the Fall of 1988, Congress was spurred to regulate the disposal of medical waste at sea because of "recent incidents of medical waste from certain public vessels washing ashore along the

⁶ 33 U.S.C. Sec. 1323(a).

⁶ The issue of State and local water pollution-control standards has been of particular concern to the Navy. "Disparate regulatory actions by State and local agencies, using clean water act authority, are now beginning to break down the orderly and practical approach to the regulation of ship discharges . . . These new standards, sometimes linked to water quality standards, are different from, and sometimes more restrictive than, federal and MARPOL standards. They often apply to effluents not previously regulated. Appropriate as local standards may be for fixed sources, they can impose an insurmountable challenge for the designers and crews of our Navy ships . . . The control of ship discharges should be reserved to the Federal and international arena where it has been managed effectively until now." MPPRCA Implementation Hearings, *supra* note 2, at 136-40.

⁷ It should also be noted that special provision is made within the FWPCA for Presidential exemption of any effluent source or, more broadly, any vessel owned or operated by the Armed Forces if such exemption is "in the paramount interest of the United States." 33 U.S.C. Sec. 1323(a). Such authority acts as a "safety valve" that enables the President to balance military mission more heavily than marine environmental protection in cases of national emergency.

Atlantic Coast."⁸⁸ This apparently refers to several reported incidents involving U.S. Navy vessels.⁸⁹ As part of a comprehensive legislative effort to prohibit dumping or disposal of medical wastes into U.S. navigable waters and the open oceans⁹⁰, Congress specifically created the United States Public Vessel Medical Waste Anti-Dumping Act⁹¹ based upon findings that "medical waste from U.S. public vessels has been disposed of improperly at sea, and that the continued disposal of such material at sea could cause risk to the public health and welfare of coastal communities."⁹²

The Public Vessel Medical Waste Anti-Dumping Act generally prohibits "public vessels" from disposing of "potentially

⁸⁸ H.R. CONF. REP. No. 1090, 100th Cong., 2d Sess., reprinted in 1988 U.S. CODE CONG. & AD. NEWS 5867, 5898.

⁸⁹ In August, 1988, 25 garbage bags of trash including syringes, i.v. bags and other medical waste washed ashore along 26 miles of North Carolina beaches after having been disposed of by the USS NASSAU (LHA 4) and USS NEWPORT (LST 1179). UPI Report, Aug. 10, 1988. On September 26, 1988, personnel from the USS CORAL SEA (CV 43) disposed of several syringes and other medical waste at sea which then washed ashore near Carteret County, North Carolina. UPI, NAVY CONCLUDES MEDICAL WASTE INVESTIGATION, Oct. 11, 1988. In October, 1988, new and used hypodermic needles from the USS FORRESTAL (CV 59) were discovered near New Smyra Beach, Florida. MEDICAL WASTE CAME FROM AIRCRAFT CARRIER, St Petersburg Times, Jan. 6, 1989, at B2. See also Navy Dumping Hearing, *supra* note 7, at 21-22.

⁹⁰ This legislative effort included amendments to both FWPCA and MPRSA to ban the disposal and/or dumping of medical wastes; see Pub. L. 100-688, 102 Stat. 4153 (1988), Sec. 3201 & 3202.

⁹¹ Pub. L. 100-688, Title III, Subtitle A, 102 Stat. 4153 (1988), codified at 33 U.S.C. Sec. 2501 et seq.

⁹² H. R. CONF. REP. No. 100-1090, *supra* note 88, at 5899.

infectious medical waste into ocean waters."⁹³ In its definition of "public vessels," it is clear that Navy ships are covered by the statute.⁹⁴ The Secretary of Defense was further directed to "issue guidance" for public vessels under his jurisdiction regarding implementation of this policy."⁹⁵

III. REGIMES ESTABLISHED FOR SPECIFIC POLLUTANTS

The following sections will focus on the specific norms contained within the aforementioned marine pollution-control regimes as pertains to common vessel-source pollutants. As a means of organization, standards for U.S. waters will be identified first, followed by those standards applicable beyond U.S. waters, and then discussion of how, and to what extent, the U.S. Navy complies with such regimes.

A. Oil and Oily Wastes

The discharge of oil into or upon the navigable waters of the U.S. "in such quantities as may be harmful" is prohibited under Section 311 of the FWPCA.⁹⁶ Discharges of oil are presumed harmful

⁹³ 33 U.S.C. Sec. 2503.

⁹⁴ "Public Vessels" are defined as including any "vessel of any type whatsoever . . . that is owned . . . and operated by the United States Government, and is not engaged in commercial service." 33 U.S.C. Sec. 2502(2).

⁹⁵ 33 U.S.C. Sec. 2504.

⁹⁶ 33 U.S.C. Sec. 1321(b)(3). For the specific purpose of Sec. 311, the FWPCA's prohibition applies in the contiguous zone, as well as in areas beyond where discharge may effect natural resources under the exclusive management authority of the U.S.,

to public health or welfare where constituting a violation of "applicable water quality standards" or where "caus[ing] a film or sheen upon or discoloration of the surface of the water."⁷⁷ "Applicable water quality standards" are defined as those adopted by the cognizant State or EPA for particular waters.⁷⁸ As to what specific amount of oil may produce a sheen, this is left undefined under EPA regulations; however, the Coast Guard has set a baseline standard of 15 ppm as the permissible oil content of effluent originating from U.S. vessels operating anywhere within 12 miles of land and for foreign vessels operating in navigable waters of the U.S.⁷⁹

Annex I to MARPOL 73/78 contains the international pollution-control regime for operational discharges of oil and oily wastes. Annex I contains differential norms for oil tankers, ships of 400 tons gross tonnage and above other than oil tankers, and ships less

"even two hundred miles for spills affecting resources protected by the Magnuson Fisheries Act" (William H. Rodgers, Jr., ENVIRONMENTAL LAW (vol. 2), 514 (1986)), except where "permitted" under MARPOL 73/78. Annex I to MARPOL 73/78 pertains to operational discharges of oil and oily mixtures; its Regulations represent the legal norms beyond three miles from the U.S. coast.

⁷⁷ 33 U.S.C. Sec. 1321(b)(4); 40 C.F.R. 110.3.

⁷⁸ 40 C.F.R. 110.1; 33 U.S.C. Sec. 1313.

⁷⁹ 33 C.F.R. 151.09(a), 151.10(b). These Coast Guard regulations specifically do not apply to warships, 33 C.F.R. 151.09(b)(1), but are illustrative of the basic standard. It should be noted that these regulations are currently being revised to reflect recent amendment to MARPOL 73/78 Annex I operational discharge rules (to be discussed infra). See 58 Fed. Reg. 60080 (1993).

than 400 tons gross tonnage. Given the fact that the majority of U.S. Navy ships are non-tankers and displace in excess of 400 metric tons¹⁰⁰, this study will concentrate on the regime established for such ships.

Because MARPOL 73/78 and APPS specifically exempt Navy vessels from the application of Annex I, the Secretary of Defense has been left with the authority to implement standards for discharges of oil and oily mixtures from U.S. warships. DoD Directive 6050.15, "Prevention of Oil Pollution From Ships Owned and Operated by the Department of Defense," dated June 14, 1985, is the comprehensive regulation issued by the Secretary defining what standards must be met. U.S. Navy ships are expected to substantially comply with both national (FWPCA) and international (MARPOL 73/78) standards.

¹⁰⁰ JANE'S FIGHTING SHIPS, supra note 3, at 723-796. In 1992, approximate U.S. Navy capital ship strength was as follows:

Submarines	109
Aircraft Carriers	15
Cruisers	49
Destroyers	40
Frigates	80
Amphibious Warfare	63
Mine Warfare	17
Auxiliary Ships	78
Military Sealift Command (MSC)	97

(Totals exclude reserve ships, prepositioning forces, landing craft, light forces, and floating dry docks).

Including the MSC, the Navy maintained a fleet of approximately 439 principle surface ships. The smallest vessels listed above would be units of mine warfare forces, displacing approximately 633 tons when light. Of these 439 surface ships, vessels utilized as oil tankers (AO's, AOE's, AOR's, AOT's) numbered 34 (16 within the active Navy, 28 maintained within the MSC). More specific rules are applicable to Navy oil tankers. See DoD Directive 6050.15.

There are four important elements to the MARPOL 73/78 Annex I control mechanisms: operational discharge rules; ship construction and equipment standards; administrative requirements, and; exceptions. An evaluation of each element follows.

1. Operational Discharge Rules

For non-tanker ships in excess of 400 tons operating outside of "Special Areas"¹⁰¹, discharge into the sea of oil or oily mixtures is generally prohibited under MARPOL 73/78 unless any such discharge meets the criteria set forth in Annex I, Regulation 9. The operational discharge rules contained in Regulation 9 are currently in a transitional period as the result of recent amendment. Review of both old and new standards is required.

Prior to July 6, 1993, non-tanker ships in excess of 400 tons were authorized to discharge oil or oily mixtures outside of "Special Areas" under two circumstances:

a. Discharge was authorized if the ship was more than 12 miles from the nearest land, was proceeding en route, the oil content of the effluent was less than 100 ppm, and the ship had in operation oil-water separation/filtration equipment and any

¹⁰¹ "Special Area" is a term used in Annexes I, II and V to MARPOL 73/78 and refers to designated sea areas "where for recognized technical reasons in relation to its oceanographical and ecological condition and to the particular character of its traffic the adoption of special mandatory methods for the prevention of sea pollution" is required. "Special Areas" vary by Annex.

discharge monitoring/control systems required under other Regulations in Annex I¹⁰²; or

b. Discharge was authorized regardless of proximity to the nearest land if the effluent had, without dilution, an oil content not exceeding 15 ppm.¹⁰³

On March 6, 1992, the 32nd session of the IMO's Marine Environment Protection Committee (MEPC) adopted a resolution, MEPC.51[32], which imposed more stringent criteria for controlling oil and oily mixture discharges.¹⁰⁴ This resolution was accepted by IMO and became an effective amendment to Annex I on July 6, 1993.¹⁰⁵ Under new Regulation 9 operational discharge rules, the zonal approach which had differentiated between ships based on a 12 mile distance from shore was abandoned. Regulation 9 now requires non-tanker ships in excess of 400 tons to observe the 15 ppm standard for oil content in any and all effluent discharges.¹⁰⁶

In adopting this new standard, IMO recognized that some existing vessels would not be able to achieve compliance by the

¹⁰² MARPOL 73/78, Annex I, "old" Regulation 9(1)(b).

¹⁰³ Id., "old" Regulation 9(4).

¹⁰⁴ The final amendment adopted by IMO is reprinted in 58 Fed. Reg. 60080 (1993).

¹⁰⁵ Id.; STATUS OF IMO MULTILATERAL CONVENTIONS, *supra* note 32, at 137.

¹⁰⁶ Concomitant with the amendments to Regulation 9 were changes to ship equipment standards in Regulation 16, to be discussed *infra* at Section III.A.2.

amendment's effective date.¹⁰⁷ Therefore, the old 12 mile/100 ppm operational discharge rule remains in effect for any vessel delivered before July 6, 1993, until either installation of oil filtration equipment necessary to achieve the 15 ppm standard, or July 6, 1998, whichever occurs first.¹⁰⁸

For non-tanker ships in excess of 400 tons operating within "Special Areas," the MARPOL 73/78 rule remains unchanged: discharge into the sea of oil or oily mixture is prohibited.¹⁰⁹ For purposes of Annex I, "Special Areas" are defined as the Mediterranean, Baltic Sea, Black Sea, Red Sea, the Persian Gulf, the Gulf of Aden, and the Antarctic.¹¹⁰

Current U.S. Navy operational discharge rules provide that when operating within 12 miles of land, or when operating in

¹⁰⁷ 58 Fed. Reg. 60080 (1993).

¹⁰⁸ MARPOL 73/78, Annex I, "new" Regulation 9(7).

¹⁰⁹ *Id.*, Regulation 10(2)(a).

¹¹⁰ *Id.*, Regulation 10(1). Annex I makes coastal State Parties responsible for the provision of reception facilities for dirty ballast, tank washings and other oily residues/mixtures. "Special Area" prohibitions were to be phased in, with the rules under Regulation 9 in force during the phase-in, for that period of time in which reception facilities were established. Regulations 10(7), 12. The "Special Area" requirements are presently in effect in the Baltic Sea, Black Sea, Mediterranean and the Antarctic. IMO-520E, *supra* note 33, at 2. However, for U.S. vessels, Coast Guard regulations make no distinction between "Special Areas" IMO considers in effect and those not in effect, choosing to require that all U.S. vessels (excluding warships) comply with MARPOL 73/78 discharge rules in all listed "Special Areas." 33 C.F.R. 151.14. Contrast this policy with how Coast Guard regulations apply Annex V "Special Areas," 33 C.F.R. 151.53 & 151.71.

"Special Areas"¹¹¹, oil content of any effluent is not to exceed 20 ppm.¹¹² When operating beyond 12 miles from the nearest land, oil content of effluent is not to exceed 100 ppm.¹¹³ Thus, we see special allowances are made for U.S. Navy vessels: they adhere to a 20 ppm vice a 15 ppm discharge standard in U.S. navigable waters or within 12 miles of a coast line, and; there is no prohibition of discharge of oily mixtures within Special Areas, rather the same limitation imposed within coastal waters is observed. DoD Directive 6050.15 does not yet address how the 15 ppm standard, which becomes effective for all civilian vessels not later than July 6, 1998, will be implemented for U.S. warships.

2. Ship Construction and Equipment Standards

Like the operational discharge rules, Annex I's oil control equipment standards are in transition; new filtration systems designed to enable compliance with the universal 15 ppm standard are required in civilian ships in excess of 400 tons that are

¹¹¹ Consistent with the approach contained in 33 C.F.R. 151.14 and discussed Id., the DoD Directive does not differentiate between Annex I "Special Areas" which IMO considers to be in effect and those not in effect. DoD Directive 6050.15, Encl. 1.23.

¹¹² DoD Directive 6050.15, Encl. 2.A.2.b. For those vessels currently operating without Oil Content Monitor's (OCM's), unable to determine their exact effluent discharge, they are required to process oily waste through the oil-water separator prior to discharge to the sea. In that these systems are designed according to Coast Guard standards, it is anticipated that this will not, under normal circumstances, produce a sheen and thus comply with the FWPCA when within three miles of the U.S. coast. Id., Encl. 2.A.2.a.

¹¹³ Id.

delivered after July 6, 1993, and to be retrofitted in all such ships not later than July 6, 1998.¹¹⁴ More specifically, the following construction and equipment standards are required for non-tanker ships under MARPOL 73/78 Annex I:

- a. All ships in excess of 400 tons must have a dedicated "sludge" tank(s) to receive oily residues that cannot be discharged in accordance with Annex I¹¹⁵;
- b. All ships in excess of 400 tons, delivered before July 6, 1993, are to be fitted with oil-water separating equipment¹¹⁶ capable of ensuring that any effluent discharged has an oil content not exceeding 100 ppm¹¹⁷;
- c. All ships in excess of 400 tons, delivered after July 6, 1993, and all ships in excess of 400 tons as of July 6, 1998, are to be fitted with oil filtering equipment capable of ensuring

¹¹⁴ MARPOL 73/78, Annex I, "new" Regulation 16(1), (2) & (6).

¹¹⁵ MARPOL 73/78, Annex I, Regulation 17. It is contemplated that these tanks will hold oily waste resulting from purification of fuel, lubricating oils and oil leakages in machinery spaces (as opposed to tank washings and ballast discharges).

¹¹⁶ An oil-water separator (OWS) works on the principle of gravity separation, centrifugal separation and coalescence. Oil and water are insoluble and since oil is lighter than water, a mixture of oil and water in a confined space (such as a tank) will tend to separate into a layer of oil on top of a layer of water. The rate at which separation occurs is dependent on many variables such as size of oil droplets, ships motion, tank heights, etc. The OWS is used to separate the oil from the water, discharge the oil to a waste holding tank, and discharge the water overboard.

¹¹⁷ MARPOL 73/78 Annex I, "old" Regulation 16(1) & "new" Regulation 16(6). IMO also interprets Regulation 16(1) as requiring oil-content monitoring and control equipment in vessels in excess of 400 tons but less than 10,000 tons where water ballast is carried in oil fuel tanks. IMO-520E, supra note 33, at 119.

that any effluent discharged has an oil content not exceeding 15 ppm¹¹⁸;

d. For "new ships"¹¹⁹ of 4,000 tons and above, segregated water ballast tanks are required¹²⁰;

e. For ships in excess of 10,000 tons:

(1) Those vessels delivered before July 6, 1993, and thus afforded special status during the transitional period, oil-water separation equipment must be fitted with an oil discharge monitoring and control system which continuously meters and records oil content of effluent in ppm and operates to automatically stop discharge of effluent when the content exceeds that permitted under operational rules¹²¹;

(2) Those vessels delivered after July 6, 1993, and for all ships as of July 6, 1998, must have oil filtering equipment and "arrangements for an alarm and for automatically stopping any discharge of oily mixture when the oil content in the effluent exceeds 15 ppm."¹²²

Consistent with Annex I, all Navy ships with gross displacement greater than 400 tons are required to have "Waste Oil

¹¹⁸ Id., "new" Regulation 16(1) & (6).

¹¹⁹ Defined in MARPOL 73/78 Annex I, Regulation 1(6).

¹²⁰ Id., Regulation 14(1).

¹²¹ Id., "old" Regulation 16(2)(a) & (5).

¹²² Id., "new" Regulation 16(2).

Tanks"¹²³ and "Oil-Water Separators" designed in accordance with Coast Guard standards.¹²⁴ For Navy ships displacing over 10,000 tons, "Oil Content Monitors" with alarm and discharge holding mechanisms are required.¹²⁵ Departure from Annex I requirements comes with regard to segregated water ballast tanks; Navy vessels continue to have sea-water compensated fuel systems¹²⁶, but the DoD Directive mandates certain management practices designed to minimize the discharge of oily ballast water.¹²⁷

¹²³ Such tanks are specifically designated for collection of oil residues and sludge from the OWS, as well as waste oil from other ship processes, and may only be discharged to proper shore reception facilities. DoD Directive 6050.15, Encl. 2.A.4., Encl. 3.B.4. Installation of collection systems was completed for Navy ships in 1985. MPPRCA Implementation Hearings, *supra* note 2, at 135.

¹²⁴ DoD Directive 6050.15, Encl. 3. Fleet installment of the Navy developed OWS is over 70% accomplished with a scheduled completion date for all vessels in 1995. MPPRCA Implementation Hearings, *supra* note 2, at 136; F.W. Tortolane, THE NAVY GOES GREEN, *Design News*, 96 (Sep. 21, 1992). This OWS installation schedule is in keeping with the 10 year time line established in DoD Directive 6050.15, Encl. 3.A.

¹²⁵ Id. Installation of the Navy developed OCM began in 1991. MPPRCA Implementation Hearings, *supra* note 2, at 135. It is anticipated that OCM's will be fitted in all Navy vessels having OWS systems, regardless of tonnage.

¹²⁶ These consist "of banks of interconnected tanks that discharge tank ballast water as new fuel is added and that add ballast water to replace fuel that is consumed during ship operations." DoD Directive 6050.15, Encl. 1.1.

¹²⁷ DoD Directive 6050.15, Encl. 2.A.5. Management practices include: fuel tank stripplings may not be discharged overboard; discharge of ballast water to shoreside reception facilities is the preferred alternative; OCM's in ballast water discharge piping must be set to ensure compliance with the 20/100 ppm operational discharge rules; ships without OCM's may not discharge ballast water when operating within "Special Areas" or within 50 miles of the nearest land, as far as reasonable and practicable. Id.

This area is representative of the difficulties the U.S. Navy sometimes faces in maintaining consistency with international pollution-control norms. With the installation of OWS systems in Navy vessels near completion, IMO has now amended Annex I equipment standards to require oil filtration systems, thus making OWS equipment "obsolete" for purposes of the MARPOL 73/78 regime. DoD Directive 6050.15 does not yet reflect how the Navy is to address these MARPOL 73/78 amendments. However, Navy research into ultrafiltration systems that utilize membranes to separate water from emulsified oils and detergents is already underway.¹²⁸

3. Administrative Requirements

In seeking to promote compliance with the above provisions and to assist in any necessary enforcement actions, there are two important administrative requirements for vessels established by Annex I. All ships in excess of 400 tons are required to be "surveyed"¹²⁹ before being put into service and at least every 5 years thereafter.¹³⁰ Upon completion of a successful survey, a ship is to receive an "International Oil Pollution Prevention

¹²⁸ THE NAVY GOES GREEN, supra note 124, at 96. Research efforts in this area were originally undertaken in connection with smaller Navy vessels, those that experience more violent motions on the seas, thus complicating the oil-water separation process.

¹²⁹ A survey is an inspection "to ensure that the structure, equipment, systems, fittings, arrangements and material fully comply with the applicable requirements of" Annex I. MARPOL 73/78 Annex I, Regulation 4(1)(a).

¹³⁰ Id., Regulation 4(1)(a) & (b).

Certificate."¹³¹ All ships is excess of 400 tons must also maintain an "Oil Record Book" to document ballasting or cleaning of fuel oil tanks, discharge of dirty ballast or cleaning waters, disposal of oily residues or overboard discharge of bilge water accumulated in machinery spaces.¹³² The Oil Record Book is to be kept "readily available for inspection."¹³³ While a vessel is located in its port or at off-shore terminals, State Parties have the right to inspect and copy Oil Record Books, thus aiding in the investigation of pollution incidents.¹³⁴

In conformity with the MARPOL 73/78 standards, all Navy ships in excess of 400 tons are required to receive an inspection before being put into service or upon installation of the equipment discussed in Section III.A.2¹³⁵; periodic inspections are required thereafter at least every 5 years.¹³⁶ When an inspection determines that a ship fully complies with DoD standards, the ship

¹³¹ Id., Regulation 5. Certificates are issued by the Government of the State under whose authority the ship is operating, i.e., the flag State.

¹³² Id., Regulation 20(2)(a).

¹³³ Id., Regulation 20(5).

¹³⁴ Id., Regulation 20(6). It is specifically provided that Oil Record Books are "admissible in any judicial proceedings as evidence of the facts stated in the entry."

¹³⁵ DoD Directive 6050.15, Encl. 4.

¹³⁶ Id.

is "certified."¹³⁷ Navy vessels have specific shipboard record keeping requirements: descriptive details of operations or discharges not in accordance with DoD standards must be recorded in appropriate Engineering Logs.¹³⁸ No provision is made for disclosure of these logs outside of DoD; given the sovereign immunity afforded warships, only flag State review of Navy Engineering Logs can be considered.

4. Exceptions

MARPOL 73/78 makes specific exception to the operational discharge rules where discharge into the sea of oil and oily mixtures is necessary for the purpose of securing the safety of the ship, saving life at sea, or where resulting from damage to the ship or its equipment so long as unintentionally incurred and reasonable precautions are taken to prevent or minimize the discharge.¹³⁹

Exceptions under DoD Directive 6050.15 are broader. In determining that exemptions "may be necessary at certain times and under certain circumstances during the operation of a normally non-

¹³⁷ Id. Certification is provided under the authority of the Secretary of the Navy.

¹³⁸ DoD Directive 6050.15, Encl. 2.A.7.

¹³⁹ MARPOL 73/78 Annex I, Regulation 11.

exempt ship,"¹⁴⁰ the Secretary of Defense has provided the following standing exemptions for Navy vessels:

a. Where operating in waters beyond 50 miles from land, with oil-water separation systems inoperable due to equipment malfunction, and on board retention of oily bilge water poses a safety hazard, discharge to the sea may be made but only after a concerted effort has been made to repair the malfunction.

b. Where operating in waters beyond 50 miles from land, a ship may discharge distillate (non-persistent) oily waste from isolated spaces if the ship does not have the capability to collect and transfer such waste for processing through the oil-water separation system.

c. During any other situation where the Commanding Officer deems a discharge of oily waste is required to ensure crew or ship safety, or to prevent machinery damage.

In such cases, any discharge must be minimized and duly recorded in the appropriate Engineering Logs.¹⁴¹

B. Hazardous Materials

In the same manner as oil, the discharge of hazardous substances into or upon the navigable waters or contiguous zone of the U.S. "in such quantities as may be harmful" is prohibited under

¹⁴⁰ DoD Directive 6050.15, Sec. D.9.

¹⁴¹ Id.

the FWPCA.¹⁴² EPA has specifically designated what elements and compounds are considered "hazardous substances" for purposes of Section 311 of the FWPCA¹⁴³, along with a "reportable quantity"¹⁴⁴, a specific amount for each listed hazardous substance that, if there is a discharge in excess of such amount, triggers a statutorily mandated reporting requirement.¹⁴⁵

International regulation of discharge to the sea of industrial wastes containing potentially hazardous substances, generated incidental to normal operations of ships not involved in carriage of noxious liquid substances in bulk, is lacking in certainty and specificity. An illustration is warranted: normal shipboard routine for any vessel includes painting and resurfacing operations. Paints, thinners, strippers, removed paint chips, may contain a variety of hazardous substances. If, as the result of a normal resurfacing operation conducted underway, one is left with

¹⁴² 33 U.S.C. Sec. 1321(b)(3).

¹⁴³ 33 U.S.C. Sec. 1321(b)(4), 40 C.F.R. 116.

¹⁴⁴ "Reportable quantities means quantities that may be harmful as set forth in [40 C.F.R. 117.3], the discharge of which is a violation of section 311(b)(3) and requires notice as set forth in [40 C.F.R. 117.21]." 40 C.F.R. 117.1(a).

¹⁴⁵ 33 U.S.C. Sec. 1321(b)(5); 40 C.F.R. 117.

a bag of paint chips and an amount of excess turpentine¹⁴⁶, may these substances be disposed of overboard?

While the London Convention acts to control the introduction of hazardous materials to the oceans, its regulatory impact applies only to "dumping," not to discharges incidental to normal vessel operations.¹⁴⁷ This is seemingly an issue for MARPOL 73/78; from an overall reading of the Convention, it appears obvious that MARPOL 73/78 contemplates coverage of such discharges, yet operational discharge rules are not clearly enunciated.¹⁴⁸

¹⁴⁶ Under MARPOL 73/78 Annex II, turpentine is a Category B substance, "which if discharged into the sea from tank cleaning or deballasting operations would present a hazard to either marine resources or human health or cause harm to amenities or other legitimate uses of the sea and therefore justify the application of special anti-pollution measures." Regulation 3(1)(b). The issue posed, however, is whether small discharges not related to tank cleaning or deballasting operations are also controlled under MARPOL 73/78.

¹⁴⁷ See discussion contained in Sec. II.C., *supra*.

¹⁴⁸ There are several provisions that lead to this overall conclusion on both intent and perceived deficiency:

1. In the MARPOL 73/78 Preamble, the Parties "RECOGNIZ[E] that deliberate, negligent or accidental release of oil and other harmful substances from ships constitutes a serious source of pollution" and "DESIR[E] to achieve the complete elimination of intentional pollution of the marine environment by oil and other harmful substances." A broad purpose can be deemed from such language.

2. In Article 2, "discharge" of "harmful substances" or effluents containing such substances is defined to include "any release howsoever caused from a ship."

3. Annex I, Regulations 9(5) and 10(4)(a), contain the following language: "No discharge into the sea shall contain chemicals or other substances in quantities or concentrations which are hazardous to the marine environment or chemicals or other substances introduced for the purpose of circumventing the conditions of discharge specified in this regulation" (emphasis added). Recall Annex I deals with prevention of oil pollution: it

Navy ships generate hazardous materials from a number of

is common practice to use detergents, solvents, or emulsifiers when washing cargo tanks and one could argue that these provisions apply to such practice. However, the provision is bifurcated and creates an uncertainty over its intent, with no further rules or considerations provided.

4. Annex II, Regulation 5, states in several places that "discharge into the sea of substances in Category [] . . . or ballast water, tank washings, or other residues or mixtures containing such substances shall be prohibited except" under specific conditions and circumstances. The effect seems to be that discharge of the regulated substances themselves is controlled separate and apart from their presence in ballast water, tank washings, etc. However, other provisions of Annex II lead one to conclude that these rules contemplate application only to ships carrying noxious liquid substances in bulk, i.e. chemical tankers. "Annex II . . . provides for the control of operational discharges of noxious liquid substances carried by bulk in ships. Operational discharges in this context means the discharges of noxious liquid substances or water contaminated by these substances which are the result of cargo tank and line washing, deballasting of unwashed cargo tanks or cargo pump-room bilge slops" (emphasis in original). IMO, "Standards for Procedures and Arrangements for the Discharge of Noxious Liquid Substances," IMO-520E, *supra* note 33, at 311. The focus of Annex II is on those harmful substances likely to be transported in large quantities in cargo tanks and thus have the potential to be discharged to the sea through tank washings or ballasting operations. Consistent with this reading, the DoD interpretation is that Navy "ships do not carry noxious liquid substances in bulk and thus are not effected by Annex II of the Marpol Protocol." DoD Directive 6050.15, Sec. B.4.

5. Annex V defines "garbage" as including "operational waste." Regulation 1(1). In IMO's "Guidelines for the Implementation of Annex V of MARPOL 73/78," IMO-520E, *supra* note 33, pp. 447-71, "operational waste" is defined as including "maintenance waste" which means "materials collected by the engine department and the deck department while maintaining and operating the vessel, such as soot, machinery deposits, scraped paint, deck sweeping, wiping wastes, and rags, etc." IMO goes on to state: "Maintenance wastes may be contaminated with substances, such as oil or toxic chemicals, controlled under other annexes or pollution control laws. In such cases, the more stringent disposal requirements take precedence." IMO-520E, at 461; See also Annex V, Regulation 3(2). Thus, we see IMO does consider MARPOL 73/78 to govern discharge of toxic chemicals related to normal operations; the problem is that by referring back to control mechanisms of "other annexes," which are either inapplicable or fail to offer guidance/standards, or other "pollution control laws," which are undefined, the operational discharge rules are left unspecific and uncertain.

routine operations: cleaning, painting, metal plating, boiler cleaning and water treatment, battery and light bulb replacement, medical and dental laboratory work, film-processing, pest control, machine maintenance, etc. For the great majority of hazardous substances generated, Navy ships are required by internal regulation to containerize the material for shore disposal.¹⁴⁹ Limited overboard discharge of certain materials, such as non-chlorinated solvents¹⁵⁰, is permitted so long as accomplished beyond 12 miles of shore, thus complying with the mandate of the FWPCA¹⁵¹ and the spirit and intent of MARPOL 73/78. Regardless, it appears necessary that IMO consider implementation of further rules or guidance in this area and that the Navy continually monitor its

¹⁴⁹ OPNAVINST 5100.19B, Navy Occupational Safety and Health Program Manual for Forces Afloat. This includes all of the instantly recognizable hazardous materials such as PCB's, heavy metals, pesticides, synthetic oils, chlorinated solvents.

¹⁵⁰ Example - ethylene glycol, methyl alcohol, ethyl alcohol, butyl alcohol, generally either Category D or Appendix III substances under MARPOL 73/78 Annex II. Even applying Annex II operational discharge rules, such substances would generally be authorized for overboard discharge.

¹⁵¹ If one accepts the proposition that MARPOL 73/78 does not contain operational discharge rules for hazardous substances under the conditions discussed in this section, this carries implications for the applicability of the FWPCA. As discussed in footnote 96, the geographic scope of the FWPCA extends to the contiguous zone (3 to 12 miles from the coastal baseline) and areas beyond where discharge may affect natural resources under the exclusive management authority of the U.S., except where MARPOL 73/78 permits a discharge. It appears that MARPOL 73/78 neither expressly permits nor prohibits operational discharges of hazardous materials. Given the broad statutory purpose of the FWPCA, its seems wise to assume the more conservative position, that the FWPCA regime extends to 12 miles from the U.S. coast (and even further in certain instances) as pertains to overboard disposal of hazardous substances generated incidental to normal operations of ships not involved in carriage of noxious liquid substances in bulk.

program to ensure that those substances authorized for discharge will not "create hazards to human health, harm living resource and marine life, damage amenities or interfere with other legitimate uses of the sea."¹⁵²

C. Sewage

For purposes of the FWPCA, "sewage from vessels" is not considered a "pollutant" for which a NPDES permit is required.¹⁵³ However, sewage disposal by vessels is regulated by the FWPCA in that it requires vessels having installed "Marine Sanitation Devices" (MSD's) to meet Federal standards of performance designed to "prevent the discharge of untreated or inadequately treated sewage" into navigable waters.¹⁵⁴ EPA, in consultation with the Coast Guard, is the agency designated to promulgate MSD standards of performance for most vessels.¹⁵⁵ In the case of Navy ships, the FWPCA directs the Secretary of Defense to promulgate appropriate regulations governing design, construction, installation, and

¹⁵² MARPOL 73/78, Article 2(2). This issue may be somewhat unique to military vessels; the level of industrial activity on board Navy ships is of a nature and extent unlikely to be required or matched on commercial vessels. With this perceived lack of international norms, it is important that the Navy be able to clearly articulate the criteria and standards it has applied in determining what hazardous materials are suitable for overboard discharge and under what conditions.

¹⁵³ 33 U.S.C. Sec. 1362(6); 40 C.F.R. 122.3(a).

¹⁵⁴ 33 U.S.C. Sec. 1322. Standards only apply to vessels on which MSD's have been installed; there is no requirement that MSD's be back-fitted on any vessel not so equipped. 40 C.F.R. 140.2.

¹⁵⁵ 33 U.S.C. Sec. 1322(b); See 40 C.F.R. 140 and 33 C.F.R. 159.

operation of MSD's to ensure compliance with national standards unless such "compliance would not be in the interest of national security."¹⁵⁶

EPA's national standards are that in freshwater lakes or reservoirs, MSD's must be designed and operated to completely prevent overboard discharge of sewage.¹⁵⁷ In all other navigable waters, MSD's must currently be designed and operated so that if there is a discharge, the effluent will not have a fecal coliform bacterial count of greater than 200 per 100 milliliters (ml) nor suspended solids greater than 150 mg/l.¹⁵⁸ This degree of sewage treatment is considered the "appropriate standard" for purposes of DoD.¹⁵⁹

DoD Directive 6050.4, "Marine Sanitation Devices for Vessels Owned and Operated by the Department of Defense," implements the FWPCA for Navy vessels. Consistent with the FWPCA's national standards, "[i]t is the policy of the Department of Defense that MSD's shall be designed and operated to prevent the overboard

¹⁵⁶ 33 U.S.C. Sec. 1322(d); See 40 C.F.R. 140.2.

¹⁵⁷ 40 C.F.R. 140.3(a)(1).

¹⁵⁸ 40 C.F.R. 140.3(d). States may completely prohibit discharge of any sewage, treated or not, into some or all of the waters within a State if such waters require greater environmental protection, adequate facilities for removal and treatment are made available, and EPA affirmatively approves State application for a "no discharge" standard. See 33 U.S.C. Sec. 1322(f)(3); 40 C.F.R. 140.4.

¹⁵⁹ 40 C.F.R. 140.3(g).

discharge of untreated or inadequately treated sewage, or any waste derived from sewage, into U.S. navigable waters."¹⁶⁰ The Navy initiated design work for shipboard sewage systems in 1973; by 1981, all existing ships had been backfitted with MSD's and since that time, all newly constructed ships have been outfitted with sewage systems.¹⁶¹

By far the most common Navy MSD is the Collection, Holding, and Transfer (CHT) System.¹⁶² The design goal of the CHT System is to provide the capacity for acceptance and retention of soil discharges from all water closets and urinals over a 12 hour period, thus allowing sufficient time for the ship to transit beyond three miles from the coast and thus outside of waters governed by the FWPCA.¹⁶³ While the Navy has experimented with sewage treatment systems that utilize aerobic bacteria to digest and breakdown organic waste matter, such systems have "proven

¹⁶⁰ DoD Directive 6050.4, Sec. D (1).

¹⁶¹ MPPRCA Implementation Hearings, *supra* note 2, at 132.

¹⁶² As of 1992, CHT systems were utilized in approximately 450 Navy ships. *Id.* The Navy is in the process of perfecting a Vacuum CHT system that will "generate only 10% of the blackwater of traditional gravity-flush systems", thus reducing overall sewage volumes. *THE NAVY GOES GREEN*, *supra* note 124, at 97.

¹⁶³ See discussion contained in Section II.D., *supra*. While a ship is in port, the CHT System is designed to transfer all soil discharges ("blackwater"), as well as waste discharges from showers, laundries, and galleys ("gray water"), to shore facilities.

difficult to operate in a Navy shipboard environment due to fluctuations in loading."¹⁶⁴

In accordance with specific authority granted under the FWPCA, the Secretary of Defense has "determined that, at certain times and under certain circumstances, compliance [with national standards] for certain vessels would unduly and unreasonably detract from their military characteristics, effectiveness, and safety to such an extent as to be not in the interest of national security."¹⁶⁵ Therefore, the Secretary has established three basic exceptions to compliance with national standards: where Navy vessels are conducting military operations/exercises, or if anchored or moored where sewage reception facilities are unavailable¹⁶⁶, or if MSD's are inoperable because of equipment malfunction, and on board retention of sewage would interfere with operational effectiveness or pose a hazard to the well-being of crew members, direct overboard discharge of sewage to navigable waters may be made. In any such instance, discharge is to be minimized to the maximum extent possible.¹⁶⁷

¹⁶⁴ MPPRCA Implementation Hearings, *supra* note 2, at 133. Dependent on an activated-sludge process, such systems require continuous sewage flows and careful, consistently controlled operation. Sewage generation rates fluctuate widely dependent upon whether a ship is at sea, in port, undergoing overhaul, etc.

¹⁶⁵ DoD Directive 6050.4, Sec. B.3.

¹⁶⁶ Or "when use of such facilities is not feasible because of foul weather, poor visibility, or unsafe environmental conditions", *Id.*

¹⁶⁷ *Id.*

As stated, the Navy's CHT System is designed to prevent discharge of sewage only until a vessel has moved three miles from the U.S. coast. Beyond that point, direct overboard discharge of sewage to the sea is made. There currently exists no international regulation of such practice in the open ocean; while Annex IV to MARPOL 73/78 seeks to control pollution by sewage from ships, it has yet to enter into force.

Should Annex IV become effective as written¹⁶⁸, to be in compliance, ships would be required to either comminute, disinfect, and hold sewage until four miles from the nearest land or, where not comminuted or disinfected, hold sewage for 12 miles and then discharge at a moderate rate while the ship is proceeding with at least 4 knots of speed.¹⁶⁹ Either approach would require modification to existing Navy MSD's.

¹⁶⁸ Annex IV has been ratified by 34 States with a combined merchant fleet of 39.76 percent of the world merchant fleet. IMO-520E, *supra* note 33, at 3. Liberia, Britain and the U.S. are the major hold-outs. BNA International Environmental Reporter, Vol. 15, No. 15, pg 496 (Jul. 29, 1992). The issue of why Annex IV has not entered into force and what could be done to revise Annex IV to reflect current conditions was raised by the German Delegation at the MEPC in 1993 and is to be reported on in March 1994. MEPC.34[23], at 35. Even if additional ratifications brought the combined merchant fleet total to the requisite 50%, there is still a 10 year phase in period for existing ships in excess of 200 tons. MARPOL 73/78 Annex IV, Regulation 2(b)(i). Thus, this issue is likely to remain academic for the near future.

¹⁶⁹ MARPOL 73/78, Annex IV, Regulation 8. Alternatively, ships may operate sewage treatment plants which meet standards developed by IMO.

Disposal of shipboard generated sewage in coastal waters, harbors, and estuaries is objectionable because of the introduction of pathogenic organisms, addition of nutrients, and aesthetic reasons (unsightly floating matter).¹⁷⁰ Yet, the "harmful effects of controlled [sewage] discharge by vessels in open waters are relatively negligible"¹⁷¹ and seem within the ocean's natural assimilative capacity. Studies of sewage discharges from Navy vessels have determined that the enormous dilution that occurs in the wake of a ship rapidly reduces coliform bacterial counts to below 20 per 100 ml.¹⁷² Chemical parameters contributing to eutrophication¹⁷³, including biochemical oxygen demand, nitrogen, phosphorus, and suspended solids, were no different in the wake of the ship than in the background waters. Given these findings, it remains questionable whether requiring expensive reconfiguring of Navy ships to meet MARPOL 73/78 Annex IV standards would result in any appreciable increase in water quality in the areas where discharges occur. However, the Navy is conducting research into "super-critical water oxidation" as a means to completely destroy

¹⁷⁰ Paul Bishop, MARINE POLLUTION AND ITS CONTROL, 232 (1983).

¹⁷¹ Id.

¹⁷² Id.; Van Hees, SEWAGE DISCHARGES FROM SHIPS TRANSITING COASTAL SALT WATERS, Water Resource Bulletin, 13(2):215-29 (1977).

¹⁷³ Eutrophication refers to the over enrichment of waters. In the process of eutrophication, overabundance of materials, mainly nitrogen and phosphorus, cause algal blooms and rapid growth of other aquatic plants. When these plants die, decomposing bacteria can deplete the water of oxygen, killing fish and other marine life. World Resource Institute, WORLD RESOURCES 1990-91, 182 (1990).

sewage residues, as well as gray water, and thus move towards pollution-free operations.¹⁷⁴

D. Garbage and Plastics

For purposes of the FWPCA, the term "pollutant" includes solid waste, garbage, and wrecked or discarded equipment.¹⁷⁵ No such waste materials may be discharged from a Navy vessel while in internal waters or three miles from the U.S. coast.¹⁷⁶

For areas beyond three miles, compliance with MARPOL 73/78 Annex V is the goal, and ultimately will be the controlling authority, for U.S. warships. MARPOL's definition of "garbage" includes "all kinds of victual, domestic and operational waste . . . generated during the normal operation of the ship and liable to be disposed of continuously or periodically."¹⁷⁷

¹⁷⁴ MPPRCA Implementation Hearings, *supra* note 2, at 134. Oxidation systems are a form of waste incineration which can be used to treat both blackwater and gray water. In this process, oxidation of organic material occurs without the need for evaporation of the liquid component if continued under high pressure. The advantages to such systems are that they are capable of destroying essentially all organics and bacteria with only a small volume of remaining solid waste residue. Disadvantages are that high operating temperatures and pressures must be maintained through a sophisticated series of controls, with frequent maintenance and experienced supervision. See Bishop, *supra* note 170, at 242-4.

¹⁷⁵ 33 U.S.C. Sec. 1362(6).

¹⁷⁶ OPNAVINST 5090.1A, *supra* note 1, Sec. 17-5.8.

¹⁷⁷ MARPOL 73/78 Annex V, Regulation 1(1).

Plastic wastes are afforded special status under Annex V because of their persistence in the marine environment and their contribution to mortality of marine wildlife through ingestion of, and entanglement in, plastic debris.¹⁷⁸ Disposal into the sea of any and all plastics is totally prohibited under the MARPOL 73/78 regime.¹⁷⁹

The Navy has taken a three-prong approach to meeting its MARPOL 73/78 Annex V obligations with respect to the plastic discharge prohibition: source reduction, management initiatives and technological innovation. Through a program labeled "PRIME" (Plastics Reduction in the Marine Environment), the Naval Supply Systems Command reviews Navy purchases to determine where plastic packaging is involved and if removal of some or all plastics, or substitution of another non-plastic biodegradable product, is feasible.¹⁸⁰ As to management initiatives, the Navy implemented a policy in 1989 requiring that ships' crew segregate plastics from

¹⁷⁸ H. R. REP. No. 358, 100th Cong., 2d Sess. (1988); "[i]t is estimated that plastic wastes kill 1,000,000 seabirds and 100,000 marine mammals each year." Plastics also interfere with shipping and other marine activities, as well as constitute an aesthetic nuisance both in the water and when washed ashore.

¹⁷⁹ MARPOL 73/78 Annex V, Regulation 3(1)(a).

¹⁸⁰ Navy Dumping Hearing, *supra* note 7, at 26. "Since [PRIME] was initiated, changes have been made to reduce or eliminate plastic packaging for over 350,000 Navy-managed items, by eliminating unnecessary plastics, using alternative materials when practicable, and packaging more in bulk. Based on annual demand projections for the items reviewed to date, an estimated 475,000 pounds of plastic will be eliminated as a direct result of these changes." U.S. Navy, Report to Congress, *supra* note 8, at 13.

all other solid waste and then further separate food contaminated plastics from other plastics. Food contaminated plastics must be retained aboard ship for at least three days before returning to port, while non-food contaminated plastics must be retained for no less than twenty days.¹⁸¹ "[F]leet implementation of this policy has produced an estimated 70% reduction in the amount of plastic waste discharged overboard."¹⁸² Finally, the Navy has recently finalized the development of a plastic processor capable of installation aboard Navy ships which can compact all plastic waste into twenty pound sterile bricks suitable for storage until shore transfer can be arranged.¹⁸³

Congress has approved of these plastic control initiatives by specifically incorporating, and statutorily mandating, each element in the 1994 National Defense Authorization Act.¹⁸⁴ The Secretary

¹⁸¹ OPNAVINST 5090.1A, Sec. 17-5.8.2.b. Distinction between the two classes of plastic waste is made because of the sanitation and odor problems associated with long-term storage of food contaminated plastic waste. Where overboard discharge must be made, it is to be accomplished beyond 50 miles from the nearest shoreline after having been properly packaged and weighted for negative buoyancy.

¹⁸² Navy Dumping Hearing, *supra* note 7, at 19.

¹⁸³ MPPRCA Implementation Hearings, *supra* note 2, at 123. The plastic processor operates by shredding and compacting plastic waste into bricks while applying heat, thus encapsulating food contamination within the bricks. THE NAVY GOES GREEN, *supra* note 124, at 95. Recycling of waste plastics into useful products (i.e., park benches) is being actively developed in conjunction with the Society of Plastics Industry. *Id.*

¹⁸⁴ Pub. L. 103-160, *supra* note 46. It should be noted that Navy initiatives in this area have been positively acknowledged. Representing 20 diverse environmental organizations, Dr. Albert

of the Navy is instructed to develop "practices for the reduction of the waste stream aboard" ships¹⁸⁵; the three and twenty day rules are now specifically made a part of APPS, with the proviso that as each individual ship receives its plastic processor, it must then meet the Annex V disposal prohibition on plastics¹⁸⁶,

Mansville submitted written testimony to Congress in 1992 that

"There is some good news to report on marine plastic dumping initiatives, especially in regard to efforts by the U.S. Navy . . . While the Navy will not meet the December 31, 1992 (sic) deadline for 100 percent cessation of at-sea, overboard discharge of plastics, they will make that deadline by December 31, 1998. . . While some would argue that the 1998 deadline is too protracted, the Navy has 'gone the extra mile' in attempting to comply with the MPPRCA. This is especially true given the complexity of their mission, lack of storage space for plastics, special problems with food contaminated plastics, fire hazards, a cumbersome and prolonged contracting process, design and development of new equipment, availability of ships for equipment installation, and other problems. We truly believe the Navy has shown a good faith effort in their Congressional mandate. The MPPRCA, of course, needs to be amended to meet the Navy's new scheduled deadline."

MPPRCA Implementation Hearings, *supra* note 2, at 192-3.

In introducing the legislative amendment to extend the Navy's compliance deadline, Senators Baucus (Montana) and Chafee (Rhode Island) stated:

"This amendment is the result of some extraordinary cooperation on the part of the Navy, a number of environmental groups, the Keystone Center, and other parties to find a workable solution that protects the environment while recognizing the Navy's operational realities . . . The Navy has undertaken a serious, good faith effort in recent years to reduce plastic pollution from its ships. The amendment has the whole-hearted support of the Department of the Navy and is endorsed by several environmental groups. . . I [Sen. Chafee] commend the Navy and the interested parties from the environmental community for the willingness to work together to find a solution."

139 CONG. REC. S11303 (Sep. 9, 1993).

¹⁸⁵ 33 U.S.C. Sec. 1902(e)(1).

¹⁸⁶ 33 U.S.C. Sec. 1902(e)(2)&(3).

and; Congress has delineated the schedule for installation of plastic processors on board Navy ships to ensure 100% installation not later than December 31, 1998.¹⁸⁷

For garbage other than plastics, MARPOL 73/78 requires that disposal into the sea be made as far as practicable from the nearest land but in any case is prohibited if the distance from the nearest land is less than:

a. 25 miles for dunnage, lining and packing materials which will float;

b. 12 miles for food wastes and all other garbage including paper products, rags, glass, metal, bottles, crockery and similar refuse, unless such garbage has been passed though a comminuter/grinder capable of producing ground garbage which can pass through a screen of 25 millimeters, in which case disposal may be made up to three miles from the nearest land.¹⁸⁸

Navy regulations are entirely consistent with these operational discharge rules.¹⁸⁹ Further, and in conjunction with the plastic processor, the Navy is developing both a new pulper which produces a sinkable trash slurry, as well as a trash compactor for those materials which cannot be pulped.¹⁹⁰ These

¹⁸⁷ Pub. L. 103-160, *supra* note 46, Sec. 1003(e).

¹⁸⁸ MARPOL 73/78 Annex V, Regulation 3(1)(b) & (c).

¹⁸⁹ OPNAVINST 5090.1A, *supra* note 1, Sec. 17-5.8.

¹⁹⁰ MPPRCA Implementation Hearings, *supra* note 2, at 125.

machines will assist in ensuring that overboard discharge of garbage, where made, will not remain floating in sea lanes or drift ashore.

There are further considerations applicable to garbage disposal in "Special Areas" designated under Annex V. For ships operating in the Mediterranean, Baltic Sea, Black Sea, Red Sea, the Persian Gulf, North Sea, the Antarctic and, most recently, the Wider Caribbean Region¹⁹¹, disposal of all garbage is prohibited except for food wastes which may be discharged so long as not less than 12 miles from the nearest land.¹⁹² There is a caveat, however; this regulation goes into effect only when each Party to MARPOL 73/78 whose coastline borders the "Special Area" has certified that reception facilities are available and IMO has established an effective date for that "Special Area."¹⁹³ To date, only the Baltic Sea, North Sea and Antarctic "Special Areas" are in effect.¹⁹⁴

¹⁹¹ MARPOL 73/78, Regulation 5(1). The Antarctic Area and Wider Caribbean Region, which includes the Gulf of Mexico and Caribbean Sea, are the most recent "Special Area" additions to Annex V. STATUS OF IMO MULTILATERAL CONVENTIONS, *supra* note 32, at 134, 136.

¹⁹² *Id.*, Regulation 5(2)(a) & (b).

¹⁹³ *Id.*, Regulation 5(4).

¹⁹⁴ IMO-520E, *supra* note 33, at 3; 33 C.F.R. 151.53. While obtaining a "Special Area" listing for the Gulf of Mexico was an important step for the U.S., until Caribbean nations provide reception facilities for off-load of garbage, and enforcement actions are strengthened to discourage clandestine dumping (which many commercial vessels may still see as the most economical waste disposal method), the problem of marine litter described in note 2

Congress has provided the Navy until December 31, 2000, for surface ships, and December 31, 2008, for submarines, to meet the "Special Area" requirements of Annex V.¹⁹⁵ The Secretary of the Navy has been directed to submit a compliance plan to Congress by December 1996 detailing how Navy vessels will meet the "Special Area" requirements.¹⁹⁶ Should the Navy's report demonstrate that compliance is not technically feasible for certain ships under certain circumstances, as is likely to be the case with respect to submarines¹⁹⁷, Congress may modify compliance requirements "as appropriate."¹⁹⁸

Emergency exceptions to these operational discharge rules are provided for under Annex V. Where disposal of garbage is necessary for the purpose of "securing the safety of a ship and those on board, or saving life at sea" or garbage escapes as a result of accident, the regulations of Annex V do not apply.¹⁹⁹ As discussed in Section II.B., the Navy may also be excepted from the _____ is likely to continue.

¹⁹⁵ 33 U.S.C. Sec. 1902(c).

¹⁹⁶ Id. The Secretary is to prepare the report in consultation with the Departments of State, Commerce, Transportation and the EPA, to include public participation, review, and comment.

¹⁹⁷ In preserving its artificial atmosphere and covertness, waste must be removed from the submarine, currently accomplished by weighted discharges. MPPRCA Implementation Hearings, *supra* note 2, at 131.

¹⁹⁸ 33 U.S.C. Sec. 1902(c).

¹⁹⁹ MARPOL 73/78, Regulation 6; 33 C.F.R. 151.77.

constraints of Annex V during time of war or declared national emergency.²⁰⁰

E. Medical Waste

The FWPCA specifically prohibits the discharge of "medical waste" into navigable waters²⁰¹; no discharges from Navy ships are allowed while in internal waters or three miles from the U.S. coast.

The Public Vessel Medical Waste Anti-Dumping Act further prohibits Navy vessels from disposing of "potentially infectious medical waste" into ocean waters²⁰² unless the health or safety of individuals on board is threatened or in cases of war or declared national emergency.²⁰³ Should either of these situations be present, "potentially infectious medical waste" may be disposed of so long as discharge is accomplished beyond 50 miles from the

²⁰⁰ 33 U.S.C. Sec. 1902(b).

²⁰¹ 33 U.S.C. Sec. 1311(f). "Medical waste" is defined as "isolation wastes; infectious agents; human blood and blood products; pathological wastes; sharps; body parts; contaminated bedding; surgical wastes and potentially contaminated laboratory wastes; dialysis wastes" and any other medical items that EPA prescribes by regulation. 33 U.S.C. Sec. 1362(20).

²⁰² While the term "ocean waters" is not defined under the Public Vessel Medical Waste Anti-Dumping Act, given its broad purpose, it would apply to all waters not already regulated by the FWPCA, i.e., beyond three miles from the U.S. coast.

²⁰³ 33 U.S.C. Sec. 2503.

nearest land and the waste is sterilized, properly packaged, and weighted to prevent washing ashore.²⁰⁴

Of interesting note is the difference between the terms used by the FWPCA and the Public Vessel Medical Waste Anti-Dumping Act. The former regulates all "medical waste" whereas the latter prohibits the disposal of "potentially infectious medical waste." In issuing guidance to the fleet, the Navy has stated that for purposes of the Public Vessel Medical Waste Anti-Dumping Act, medical waste not meeting the definition of "potentially infectious medical waste"²⁰⁵ may be treated like garbage and disposed of in accordance with the regulations set forth in Section III.D. of this paper. However, even "other medical waste" is directed to be weighted for negative buoyancy to ensure it is not washed ashore.²⁰⁶

IV. CONCLUSION

From the foregoing review, it is reasonable to conclude that pollution-control standards for U.S. Navy ships are generally consistent with those applied to civilian vessels, with allowances made in recognition of the unique nature and purpose of warships. In the balancing of interests, as reflected in both the international and national regimes, the importance of national

²⁰⁴ Id.

²⁰⁵ 33 U.S.C. Sec. 2502(1).

²⁰⁶ OPNAVINST 5090.1A, *supra* note 1, Sec. 17-5.8.2(d).

defense may, at times, outweigh full compliance with established marine pollution-control norms. Something approaching full compliance, tempered with reasonable and limited exceptions based upon operational necessities, has been deemed the appropriate standard for U.S. warships.

The U.S. Navy's shipboard pollution-control program has made significant progress in developing technology to lessen adverse environmental impacts.²⁰⁷ As described throughout this paper, research and development of even more advanced technologies, including ultra-filtration equipment, vacuum CHT MSD's, super-critical water oxidation systems, garbage pulpers and compactors, is ongoing to reach an even higher level of environmental protection. The Navy's stated goal is to maintain a fleet of "environmentally sound ships" that can operate anywhere in the world without producing adverse environmental impacts and in compliance with all applicable environmental regulations.²⁰⁸ Such a goal will be realized when U.S. Navy vessels have the optimal ability to: minimize waste generation where possible; retain,

²⁰⁷ The significance of this program extends beyond the U.S. Navy; in March 1992, NATO established a new "Special Working Group [SWG/12] on Maritime Environmental Protection." "The task of SWG/12 is to promote, through information exchange, the development of capabilities among NATO navies to act consistent with international measures, and to foster co-operative efforts for achieving environmentally sound ships." Koss, *supra* note 16, at 8. Sharing of pollution-control technology among the world's major blue-water navies is specifically envisioned. MPPRCA Implementation Hearings, *supra* note 2, at 24.

²⁰⁸ U.S. Navy, ENVIRONMENTAL PROGRAM: MEETING THE CHALLENGE, at 16-7 (undated publication).

recycle, or destroy wastes at sea where appropriate, and; adequately treat any wastes that must be discharged to the sea so that such disposal carries no significant environmental effect.²⁰⁹

In a period of shrinking military budgets, some might question whether significant resources should continue to be invested in efforts to further pollution-control technologies, given the special status afforded warships under international marine pollution conventions, and considering the level of technology already achieved. Such a viewpoint would be extremely shortsighted and ignores both international and domestic realities.

In the post-Cold War era, environmentally sound ships are of vital importance to the U.S. Navy. While its primary mission continues to be that of power projection at sea and ashore, increasingly the U.S. Navy has been expected to assume a diplomatic role (the extension of U.S. political policy through presence of the flag) as well as a constabulary role (the protection of shipping and international peace-keeping).²¹⁰ One need only look to recent Navy commitments for examples: enforcement of U.N.-imposed "No Fly Zones" over southern Iraq and Bosnia; the presence of Navy-Marine Corps amphibious units off the coast of Somalia in support of U.N. initiatives, and; enforcement of trade embargoes

²⁰⁹ Koss, *supra* note 16, at 8.

²¹⁰ Frank Barnaby, THE ROLE OF THE NAVIES IN THE 1990S AND BEYOND, 10 OCEAN YEARBOOK 229, at 237 (1993), citing to Eric Grove, THE FUTURE OF SEA POWER (1990).

against the military government in Haiti. The days of bipolar confrontation on the high seas have given way to a mission of forward deployed presence, often in waters close to shore, for the purpose of influencing regional events.

In conducting such operations, the U.S. Navy can expect coastal States to pay particular attention to the issue of warship compliance/consistency with international environmental regimes. As witnessed in the proliferation of 200-mile Exclusive Economic Zones, the safeguarding of near-shore oceanic resources is an increasingly important concern for coastal States; 116 countries now deploy patrol and combatant ships mainly for such purposes.²¹¹ An impression that U.S. Navy vessels pollute the waters in which they sail is likely to result in increased political tensions over presence in or near foreign waters, and perhaps even attempts by coastal States to further extend national sovereignty with respect to the prescription of pollution-control measures.²¹²

²¹¹ *Id.*, at 238.

²¹² While the U.S. is not a Party to UNCLOS III, to the extent that its provisions are representative of emerging or established customary international law, coastal States possess the authority to "adopt laws and regulations for the prevention, reduction and control of marine pollution from foreign vessels." Article 211, UNCLOS III. Within its 12-mile Territorial Sea, a coastal State is given sovereign authority to determine the level of environmental protection. Article 211.4. If a warship exercising innocent passage does not comply with the laws and regulations of the coastal State concerning such passage, including pollution-control measures, the ship may be required to leave the Territorial Sea immediately. Articles 30, 211.4. In the EEZ, vessel-source pollution regulations of coastal States are to conform to "generally accepted international rules and standards established through the competent international organization or general

Thus, environmentally sound ships not only serve to protect and preserve the ocean environment, they also equate to operational freedom, the ability to move within international and national waters around the globe without having to intermittently withdraw to certain ports or to specified distances off-shore in order to discharge wastes. In addition to such political and military considerations, there are economic incentives. Ships that minimize their waste streams reduce logistical requirements while deployed and costs associated with the off-loading of wastes in foreign ports.²¹³

Equally important considerations for the U.S. Navy are the environmental values and perceptions of the American people. Any goal short of obtaining environmentally sound ships carries adverse public relations implications, with corresponding negative effect on support for the Navy's overall mission. There have been occasions within the past several years where the Navy has been publicly criticized and called upon to answer for perceived

diplomatic conference." Article 211.5. States dissatisfied with vessel-source pollution efforts may effect more stringent standards within Territorial Seas, pressure IMO for increased standards at the international level, seek to extend the principle of sovereignty for pollution-control purposes to include the EEZ, or a combination of all three. While continuing to maintain the warship sovereign immunity exemption under Article 236, such reaction from coastal States would carry significant political implications for U.S. Navy near-shore operations.

²¹³ Koss, *supra* note 16, at 2-3. "In non-naval ports of foreign ports, visiting ships often have to pay substantial costs for private contractors to dispose of ship-generated wastes."

deficiencies in vessel waste disposal practices.²¹⁴ Regardless of whether such instances are founded or not, the mere perception that Navy ships appreciably degrade ocean waters results in damaged environmental credibility and carries the potential for direct Congressional intervention.²¹⁵ In clear contrast to such negative perceptions stands the Navy's handling of the plastics discharge ban under MPPRCA.²¹⁶ In the process of seeking to comply with MPPRCA, Navy officials demonstrated concern for environmental protection, openly discussed where operational requirements were in conflict with environmental regimes, maintained flexibility in approaching potential solutions, and worked in conjunction with environmentally concerned citizens in reaching a result that all

²¹⁴ See note 89, *supra*. In April, 1991, military personnel on board the USS RALEIGH (LPD 1) were videotaped disposing of dozens of garbage-filled plastic bags at sea, resulting in Navy officials being summoned to Capital Hill for Congressional Hearings. Navy Dumping Hearing, *supra* note 7. During 1993, the national media and environmental groups followed the case of Hull Technician Fireman Apprentice Aaron Ahearn, an "environmental conscientious objector" who allegedly deserted his Navy ship out of frustration over waste disposal practices. U.S. NAVY DENIES ENVIRONMENTAL GAFFES, Cable News Network, Inc., Jun. 5, 1993 (transcript #411-4); SURFER TAKES ON THE NAVY, *The Progressive*, Oct. 1993, at 17; HOW THE NAVY SOILS THE SEAS, *Earth Island Journal*, Summer 1993, at 15.

²¹⁵ The incidents involving Navy ships in 1988 that culminated in the Public Vessel Medical Waste Anti-Dumping Act, discussed *supra* in Section II.E, is the perfect example. See also MPPRCA Implementation Hearings, *supra* note 2, at 43: "the last thing that the services wants us to do and, believe it or not, the Congress is to micromanage these programs. But what happens is, when we get criticisms or complaints or we see that there are gaps in enforcement or development of programs or regulation, it does get people very interested on this side of the table" (statement of Sen. Lautenberg (New Jersey)).

²¹⁶ See the discussion contained in Section III.D., and particularly note 184, *supra*.

sides consider a significant victory. The type of public involvement and support garnered through the MPPRCA experience is invaluable; it provides proof positive that a commitment to environmental leadership enhances the Navy's image. Such lessons must be incorporated in the Navy's environmental program.

This paper has focused almost exclusively on defining the applicable legal regimes for U.S. warships. Yet, neither written rules nor technological innovation alone guarantee effective environmental protection programs. There must also be fostered within the naval service an understanding that successful mission performance and proper environmental practices are inextricably linked. The Navy's command structure has a duty to ensure that Navy ships are fitted with appropriate pollution-control equipment; every link in the chain of command has a duty to ensure that waste discharge rules become ingrained at the "deck plate" level. As with so many other responsibilities, ensuring individual ship compliance with vessel-source pollution regimes ultimately rests with the Commanding Officer.

Pollution-control regimes have the potential to impact mission performance. Given the Navy's need to operate worldwide with minimal constraints, free from inordinate dependence on shore facilities and unreasonable costs associated with environmental regulations, environmentally sound ships are an absolute

necessity.²¹⁷ This requires a continuing commitment to the design of effective pollution-control systems, incorporation of such systems in ship planning and construction, and institutional support from the highest echelons to the youngest seaman recruit. With such efforts, the Navy will ensure that the national defense mission is compatible with environmental protection of the oceans.

²¹⁷ Koss, *supra* note 16, at 8.